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ABSTRACT

A system of quantitative techniques for describing the English language from a number of perspectives, intended for the language analyst, is presented. The grammar combines an emerging knowledge of semantics with existing detailed knowledge of syntax. The primary unit of analysis is the predication, a group of related concepts expressed as a finite or nonfinite clause, taking varied structures. A section on theory presenting the fundamentals of the proposed grammar is introduced by a chapter explaining structures and terms. Other chapters in this section outline the predication, secondary arguments, argumental relationships between predications, and nonargumental relationships between predications. The second section describes the specifics of the application of the grammar to language analysis, focusing on quantification techniques. Chapters address these topics: measuring argumental characteristics, measuring argumental relationships, measuring nonargumental relationships, and syntax. Substantial statistical documentation of the techniques is not presented because of the early stage of development of the system. (MSE)

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A QUANTITATIVE GRAMMAR OF MEANING AND STRUCTURE:

A METHODOLOGY FOR LANGUAGE ANALYSIS

By

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CHAPTER 1

INTRODUCTION

Recent years have seen many advances in our knowledge of semantics. Specifically case grammars have given us a way of coding the relationships that exist among concepts; discourse analysis has given us methods of codifying the relationships that exist among larger units of thought (eg. propositions, clauses). Our emerging knowledge of semantics coupled with our already detailed knowledge of syntax make for an environment ripe for the creation of a language analysis methodology which combines syntax and semantics. Such is the purpose of this grammar.

The intended use of this grammar, then, is as a language analysis tool--a system that can be used to study the English language from a number of perspectives. Other syntactic and semantic grammars have been developed more as models of language production and do not necessarily lend themselves to quantification. The intended audience of this grammar is the practitioner--the language analyst who is interested in studying and quantifying the speaking/writing patterns of various subgroups within the English speaking population. Such practitioners usually wear the hat of speech pathologist, reading or writing diagnostician, cognitive psychologist or language researcher. These individuals need a tool that is not only comprehensive in its description of the language but relatively easy to administer (realizing that any comprehensive language analysis system will be complex). Consequently, this grammar was developed in such a way as to maximize the ease with which it can be applied and the amount of information that can be gathered with it.

This text is divided into two sections; Part I (chapters 2 through 6) is entitled "Theory" and presents the fundamentals of the grammar. Part II (chapters 7 through 10) is entitled "Application"; it describes the specifics of how the grammar can be used as a language analysis tool. It is important to note that the quantification techniques described in Part II are presented without statistical information as to their validity (eg. the extent to which they statistically differentiate one group of language users from another). This is because the grammar is at an initial stage of development; yet one which, I believe, warrants its publication and use by other practitioners/researchers.

So as not to mislead the reader, it should be stated that I am using the term "grammar" here not in its usual sense. Technically a grammar is a formalized description of the rules governing the usage of language. Here I use the term as a system of quantitative techniques which can be used to describe language. Hopefully the presentation of the grammar in its present form will hasten the identification of some quantitative trends in the use of discourse level and case level relationships.

AN OVERVIEW

The primary unit of analysis in this grammar is the predication. A predication is a group of related concepts that can be expressed as a finite or nonfinite clause (eg. a subordinate clause or a verbal). Consequently the structures a predication can take are many and varied. In its complete or finite clause form, a predication consists of a verb and one or more nouns, adjectives or adverbs. The verb in the predication is called the predicate; the remaining elements are called the arguments of the predication. For example, in the following predication went is the predicate and Bill and home are the arguments:

Bill went home.

Arguments can be differentiated as to the various types of semantic relationships (commonly called "cases") they can have with one another and with the predicate; they can also be differentiated as to the various syntactic forms they can take. For example, in the predication above the argument, Bill, has what is called an agent relationship with the predicate. The argument, home, has a direction relationship with the predicate. Characteristically, agent arguments are filled by nouns and direction arguments are filled by adverbs. There are over twenty different argument types, each with its own unique type of semantic relationship and each with its own distinct class(es) of lexical items.

As was mentioned above, predications can be expressed as structures other than an independent clause. Specifically, they can be stated as subordinate clauses or verbals and embedded within another predication:

I saw the boy running down the street

Predication #1

Predication #2

There are two types of relationships that can exist between predications: argumental relationships and nonargumental relationships. Predications are said to have an argumental relationship when they share an argument and/or when an argument in one predication refers to an argument in another predication. To illustrate, consider the following:

a) I like Jana

b) (She) is a wonderful person

Here the pronoun she in predication b refers to the argument Jana in a.

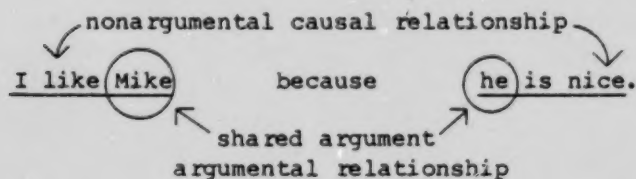
The use of argumental relationships between predications is the most powerful and frequently used method of binding a set of ideas together within discourse or of creating "cohesion" in discourse. Whether those predications are stated as independent sentences or as structures embedded within other predications, they form a network of interconnected arguments. There are various rules which govern such networks. When these rules are broken, discourse appears disjointed, rambling or illogical. When those rules are followed, discourse is cohesive and comprehensible.

Nonargumental relationships form the second type of cohesive thread which binds predications together within discourse. Nonargumental relationships between predications are those which are not dependent on the sharing of an argument.

The flowers are blooming because the sun is shining.
a b

Here, predications a and b have no shared argument (no argumental relationship) yet they have an obvious relationship with one another--one of causation. Causal relationships, then, are not dependent on the sharing of an argument between

predications; hence the name nonargumental. This is not to say that predications with a nonargumental relationship can not also have an argumental relationship. Indeed, nonargumental relationships are usually an overlay on argumental relationships, creating a second network connecting discourse:



As we shall see, it is the charting or mapping and quantification of these two cohesive networks that provides much useful information about style and development in writing and speaking.

PART I

CHAPTER 2

STRUCTURES AND TERMS

Before engaging in a discussion of the semantic relationships that can exist within and between predications, it is necessary to discuss the various structures that will be used to describe the syntax of the grammar. Most of the terms used are standard within a traditional grammar context. When this is the case for a given term, little explanation will be presented--the assumption being that the reader is familiar with the traditional grammar explanation of that term.

PARTS OF SPEECH

Traditional grammars commonly define eight parts of speech: noun, adjective, adverb, verb, pronoun, preposition, conjunction, interjection. This grammar has nine parts of speech: noun, adjective, adverb, verb, pronoun, wh-word, argument marker, relationship marker, and interjection. I will briefly discuss each.

Noun

Traditionally, a noun is defined as that element in a sentence which typically functions as the subject, object, or complement. Nouns have several characteristics that set them apart from other word classes. They can form plurals (boat, boats); they can take articles (the boat, a boat) and they have a special form for the genitive (Mary's book).

As is the case with most grammars, I will use the syntactic category called "nominal" which will be the name given any word or group of words that normally would not be classified as a noun but which performs the function of a noun within a specific sentence. Here I am speaking specifically about verb forms. For example, the constructions to win and what I want below will be referred to as nominals:

To win is what I want.

Throughout the text I will occasionally use the symbol N to represent a noun.

Pronoun

As the name implies, a pronoun "takes the place of" a noun in situations where it would be stylistically awkward to use a noun to reference a concept. There are many subcategories of pronouns which include: personal, reflexive, possessive, demonstrative, and indefinite.

The personal pronouns are I, we, me, us, you, he, him, she, her, it, they, them. They have different forms depending on their number (singular or plural), case (nominative, objective), person (first, second, third) and gender (masculine, feminine, neuter).

Reflexive pronouns are combinations of the personal pronouns with the suffixes -self or selves. They are: myself, ourselves, yourself, yourselves, himself, herself, itself, themselves. These pronouns are used to express a reflex action upon the subject or to intensify the effect of the noun on the action of a predication.

He cut himself
He himself is responsible.

The possessive pronouns are whose, my, our, your, mine, ours, yours, hers, theirs, her, its, their. They have one form for prenoun position (my book) and another for noun position (The book is mine). Their purpose is to represent nouns in the genitive case.

The demonstrative pronouns are this, that, these, those. They can occur in noun positions.

I want those.

They can also occur in prenoun position.

I want those books.

Most grammars have a large class of pronouns called indefinite. Here I will restrict the class of indefinite pronouns to the following:

everyone, everybody, everything, somebody, someone, something, some, anybody, anyone, anything, enough, no-one, nobody, each, either, neither, nothing

These pronouns are indistinguishable by gender and are consistently used for third person reference. Many of these pronouns can combine with else to form compound pronouns (nobody else). Also some can combine with other and another to form what are called reciprocal pronouns because they suggest an interaction (each other).

There, here, and same are also considered pronouns within this grammar when used in specific ways. There and here are used to refer to explicitly stated or implied locations. The pronoun same has some special functions which are discussed in detail in Chapter 5.

Wh-words

Most traditional grammars contain two subtypes of pronouns called relative and interrogative. Here I classify both of these in a separate category called wh-words. Specifically the wh-words are: who, whom, which, that, what, when, where, wherever, why, how, whoever, whenever, however, whichever, then, while. (Note that whose is excluded from this list. In this grammar it is classified as a possessive pronoun.)

The function of these wh-words is explained in detail in Chapter 5. In general their function is similar to that of a pronoun--to refer to some previously stated argument. The reader should note that the wh-word that and the demonstrative pronoun that are considered homonyms. Throughout the text the symbol wh will commonly be used for wh-words.

Verb

A verb expresses action, being, or state of being. Semantically, verbs fall into one of two broad categories: statives and dynamics. Dynamic verbs are a large open class, all of which identify some action. Stative verbs are a very small class of lexical items, the functions of which is to indicate being or state of being. The verb to be is the most frequently used stative verb but a number of others (commonly called "linking verbs") can also be used: the sense verbs like feel, look, smell, sound, taste and others like appear, become, continue, grow, prove, remain, seem, stand, and turn.

Structurally, verbs can appear in one of a number of forms: 1) the base form (that used with to to form an infinitive); 2) the present participial form (base form + ing);

3) the third person singular (base form + s); 4) the past participial form (base + d or ed). Verbs whose forms are constructed in this fashion are commonly called "regular verbs." Some verbs use different construction to represent the past and past participial forms (fall, fell, fallen). These verbs are called irregular.

Within a predication verbs usually occur with one or more helping verbs to indicate tense, aspect, voice and mood. The various tenses that can be constructed are summarized and illustrated below:

	Active Voice	Passive Voice
	Indicative Mood	
Present	He sees.	He is seen.
Past	He saw.	He was seen.
Future	He will see.	He will be seen.
Present Perfect	He has seen.	He has been seen.
Past Perfect	He had seen.	He had been seen.
Future Perfect	He will have seen.	He will have been seen.

	Progressive Mood	
Present	He is seeing.	He is being seen.
Past	He was seeing.	He was being seen.
Future	He will be seeing.	*He will be being seen.
Present Perfect	He has been seeing.	*He has been being seen.
Past Perfect	He had been seeing.	*He had been being seen.
Future Perfect	He will have been seeing.	*He will have been being seen.

(*Technically, these constructions can be used; however, in standard usage they are rare.)

	Emphatic Mood
Present	He does see.
Past	He did see.

	Imperative Mood
See	Be seen

	Subjunctive Mood
(If) he sees	(If) he be seen

Helping verbs fall into two broad categories: auxiliaries and semi-auxiliaries. The auxiliaries can be further classified into modals and primary auxiliaries. Summarized below are the different classifications of helping verbs:

Semi-Auxiliaries

Auxiliaries

	Modals	Primary Auxiliaries
be about to		
be apt to		
be bound to	can	do
be going to	could	have
be liable to	may	be
be sure to	might	
be to	shall	
had better	should	
had best	will	
have to	would	
have got to	used to	
come to	must	
fail to	ought to	
get to	need	
tend to	dare	
be certain to		
be (un)likely to		
appear to		
happen to		
seem to		
turn out to		
used to		
start to		
begin to		
continues to		

The semi-auxiliaries generally function like auxiliaries but do not possess all characteristics of an auxiliary (eg. They cannot occur as an operator at the beginning of a sentence and indicate a question). The primary auxiliaries do, have and be indicate the tense and aspect of a verb phrase; the modals indicate mood.

A basic distinction can be made between finite and non-finite verb phrases. Finite verbs are primary verb forms that show person, number, tense, aspect and mood and act as the predicate in main and subordinate clauses. Nonfinite verbs include gerunds, participals and infinitives. They show only some of the distinctions of finite verbs.

A verb plus its auxiliary is called a verb phrase. Throughout the text the following symbols will frequently be used:

VP = Verb phrase
MV = Main verb (base form)

MV+s = Main verb (third person singular form)
 MV+ing = Main verb (present participial form)
 MV+ed = Main verb (past participial form)
 Aux = Auxiliaries and semi-auxiliaries

Adjectives

Adjectives are characteristically very difficult to operationally define. In general, adjectives have the following characteristics:

- 1) They can occur before a noun and name an attribute of the noun.

the blue car

- 2) They can occur after a stative verb.

eg. The car was blue.

- 3) They can be premodified by an intensifier.

very sleepy

- 4) They can take comparative and superlative forms.

happy happier happiest

Frequently adjectives that deal with quantity (eg. many, few) are used with the particle of to form a two-part adjective.

Many of the people were absent.

Simple adjective forms will be symbolized by Adj throughout the text. Two part adjectives will be symbolized by Adj + of.

Adverbs

Adverbs are perhaps the most heterogeneous word class. It has been suggested that an adverb should be defined as an item that does not fit the definition of any other part of speech. Traditionally, adverbs include adjuncts, disjuncts and conjuncts. Adjuncts are considered part of the clause in which they appear and commonly signify time, duration, location, direction, and manner.

They were walking outside.

They went home.

He walked quickly.

Disjuncts are not considered part of the clause in which they appear. They usually express an evaluation of what is being said either with respect to the form or the content of the communication.

Frankly, there is nothing I can do.

Fortunately, the storm did not hit at rush hour.

Conjuncts, like disjuncts, are not considered part of the clause in which they appear; they have a connective function and usually signal a relationship between the two structures they connect:

He has been sick for two weeks and yet he will still not see a doctor.

I like him. He seems rather aloof though.

In traditional grammar conjuncts are subdivided into many categories which include coordinate conjunctions (and, but, or nor) correlative conjunctions (either...or, neither...nor) and conjunctive adverbs (therefore, however, though). Conjuncts, then, cut across at least two traditional parts of speech, adverbs and conjunctions. In this grammar all conjuncts will be grouped into one part of speech called relationship makers. Adverbs in this grammar will include disjuncts and adjuncts but not conjuncts. Frequently the symbol Adv will be used to represent adverbs.

Relationship Markers

Relationship markers are those words or phrases which express or signal a relationship between two predications. To illustrate, consider the following:

He went home because he was desperate and had no money.

This sentence contains two relationship markers because and and. Because marks the causal relationship between the first predication (He went home) and the last two (he was desperate; [he] had no money). The relationship marker and signals the coordinate relationship between the predications he was

desperate and (he) had no money. Relationship markers fall into a number of categories which are discussed in depth in Chapter 6. I will use the symbol RM to represent relationship markers.

Just as verb forms can function as a noun (nominal) within a sentence, so too can entire predication function as relationship markers. To illustrate, consider the following:

Mark helped Sally study for French.

He did this because she had helped him in chemistry.

Here, there are three predication: 1) Mark helped Sally in French. 2) He did this because... 3) Sally had helped him in chemistry. The first and third predication have a causal relationship. This relationship is signaled by the second predication which adds no new information to the set other than to signal the relationship between 1 and 3.

Argument Markers

Argument markers signal the relationship that exists between the arguments in a predication and the verb. To illustrate, consider the following:

He went to the store on Friday.

Here, to and on are argument markers which indicate the relationship the arguments store and Friday have with the rest of the predication. In general, the class of words called prepositions in traditional grammar will be called argument markers in this grammar. As in the case with relationship markers entire predication can also perform the function of an argument marker.

a) Bill robbed a bank.

b) This was done with Mark.

Here the predication this was done adds no new information; it is simply a linguistic device to connect the argument with Mark to predication a. Argument markers will be represented by the symbol AM.

Interjections

Interjections are purely emotive items which have little or no referential context. They include such items as:

whew	ouch
ah	ow
oh	ugh
wow	ooh
oho	tut-tut
yipie	alas
aha	un-huh
mm	eh

Within a predication they function as a special type of argument called an exclamation and are signaled by a rise in pitch in the spoken language or an exclamation point in the written language. Interjections will be represented by the symbol Int.

PARTS OF A PREDICATION

In traditional grammar the subject of a predication is that grammatical unit directly before the verb about which an action or a state is expressed by the predicate. Predications may also have elements which appear after the verb. In traditional grammar those postverb elements are called direct object, indirect object, subject complement, or object complement. In this grammar I will call all postverb arguments "complements" regardless of their semantic function. Instead I will rely on the different argument types to differentiate these elements as to meaning. As we will see in Chapter 3, this is a far more precise way of classifying postverb structures. I will also refrain from attaching any semantic meaning to the term "subject" again relying on argument types to differentiate among semantic categories.

CHAPTER 3

THE PREDICATION

The basic unit of language analysis in this grammar is the predication. A predication contains an explicitly stated verb called the predicate and one or more nouns, pronouns, adjectives, adverbs, interjections, or wh-words called arguments. The purpose of the verb is to "predicate" or establish information about the arguments. For example, the following predication has two arguments: Bill and Mary.

Bill kissed Mary.

Here, the function of the predicate, kissed, is to establish a relationship between Bill and Mary: Bill is the initiator or agent of the action kiss; Mary is the receiver of, or the one affected by the action of the agent and the predicate.

A predication, as an entire unit, can be classified as either stative or dynamic, depending on the type of verb it contains. That is, predications with stative verbs are referred to as stative predications; predications with dynamic verbs are referred to as dynamic predications. The arguments within stative and dynamic predications can be precisely classified as to the semantic relationship the argument has with the rest of the predication. In this chapter, I will describe the different types of arguments.

ARGUMENT TYPES

There are twenty different types of primary arguments that can occur within stative and dynamic predications. Below, we will consider each separately. Specific rules for identifying argument types within predications are presented in Chapter 7. Here, the attempt is only to define the various argument types, and not, as yet, to establish a procedure for language analysis.

Agent Arguments

Agent arguments are those grammatical elements which are the initiator of the action expressed by the predicate:

Bill kissed Mary.

Agent arguments appear only in dynamic predications. They are always animate nouns and are always found in subject position with active voice verbs. They appear in complement or postverb position with passive voice verbs. In such cases they are always accompanied by the argument marker by.

Mary was kissed by Bill.

Verbs that take agent argument may be either transitive or intransitive. That is, they may or may not take a complement:

Bill laughed. (Intransitive)

Bill kissed Mary. (Transitive)

Instrument Arguments

These arguments are the inanimate tool or means by which the action expressed by the predicate is accomplished.

a) He opened the door with a key.

b) The key opened the door.

Instrument arguments can occur in subject and complement position. When they appear in complement position, they are always accompanied by the argument markers with or by. Instrument arguments are always inanimate concrete nouns. As examples a and b illustrate they can appear along with an agent argument (Note that He is the agent in predication a); an agent is the actual initiating force behind the action; an instrument argument is the tool used by the agent.

Stimulus Arguments

Stimulus arguments are the inanimate and usually abstract arguments which are the underlying motivation or reason for the action or state expressed by the verb in the predication:

a) He was tired from the trip.

b) He called the police out of fear.

Above, trip and fear are stimulus arguments. Note that they appear similar to agent arguments in that they identify a causal factor in the action or state expressed by the verb.

The difference is that stimulus arguments are not animate and are not physically involved in the action or state expressed by the verb. Instead, they are the motivation behind the action. Consequently, stimulus and agent arguments can co-occur in a predication:

Mary likes horses because of their beauty
agent stimulus

Unlike agent arguments, stimulus arguments can appear in both statives (example a) and dynamics (example b). In dynamic predications stimulus arguments can appear in subject position without an argument marker.

Love conquers all.

Most commonly, however, they are introduced by one of the following argument markers.

because of
on account of
for
for _____ of
from
out of

In retrospect we can say that three types of arguments can appear in subject position and have some causal relationship with the action expressed by the verb (agents, instruments, stimulus). The differences in their semantic roles are important. Agents are always animate nouns physically involved in the action:

Bill kissed Mary.

Instrument arguments are always concrete, inanimate elements that are used by the agent to accomplish the action:

Bill hit his thumb with a hammer.

Often the agent is implied; it is in these situations that instrument arguments are given subject position:

The hammer hit his thumb.

Stimulus arguments are inanimate, usually abstract nouns which are the motivating force behind the action. Actually stimulus arguments are somewhat of a residual category that encompass:

- (1) all arguments in subject position that can not be classified as agents or instruments and . . .
- (2) occur with dynamic, active voice verbs and . . .
- (3) have some type of causal relationship with the action expressed by the verb and/or . . .
- (4) are introduced by one of the stimulus argument markers.

More explicit rules for deciding among agent, instrument and stimulus arguments are described in Chapter 7.

Affected

Affected arguments are the final type of argument that can occur in subject position in dynamic predications with active voice forms. They are always nouns; they can be concrete, abstract, human, nonhuman, animate or inanimate. They are different from the other subject position arguments in that they have no causal influence on the action expressed by the verb. Instead it is implied that they are affected by some outside source:

eg. Her mind deteriorated over the years.

Here mind is an affected argument. The verb deteriorated does not call for a subject that has a causal relationship. A small subset of verbs in the English language have this property. Many of those verbs are in the general category that some linguists call process verbs: change, grow, widen, etc. These include many verbs classified as intransitive. In this grammar the affected argument category will be reserved for the subject in predications with active voice verbs which are judged as not requiring any causal action on the part of the subject. Of course, in some cases this will be a "judgement call" on the part of the language analyst. In most cases, however, affected arguments are easy to identify.

Described Arguments

These are the animate or inanimate arguments that are described, specified or characterized by the predicate and remaining complement argument in a stative predication:

- a) Bill is tall.
- b) Mary is beautiful.

Described arguments are always in subject position in stative predications. They have no active semantic role as do subject arguments in dynamic predications. Instead, the complement in the predication is established as a characteristic of the described argument; in a above, tall is established as a characteristic of Bill; in b, beautiful is established as a characteristic of Mary.

Recipient Arguments

Recipient arguments are those arguments which are receivers of something via the action of a dynamic verb and some other argument.

- a) He gave Bill the money.
- b) He gave the money to Bill.

Recipient arguments are always nouns and always occur in complement position when the verb is active. The majority of the time recipient arguments occupy the position called indirect object in traditional grammar. As predication a indicates, recipient arguments can be stated without an argument marker or with the marker to. Dynamic verbs that can take recipient argument are limited to a fairly small class which includes such items as give, hand, send. When the verb in the predication is in the passive voice, recipient arguments can occupy subject position.

Bill was sent a letter by Mark.

Subject Matter

Subject matter arguments are the abstract, animate or inanimate arguments that are the subject of the action expressed by the verb and another argument:

- a) They talked about love.
- b) He was upset with his grade.

As a and b illustrate, subject matter arguments can appear in dynamic and stative predications. They are always preceded by one of the following argument markers:

about
on
for
at
of
with

The markers about, of and on are commonly used with dynamic verbs; the markers at, with, about and for are commonly used with stative verbs. A special type of subject matter argument occurs with dynamic verbs that identify some type of building or constructing action.

The boat was made of fiberglass.

Here, fiberglass is a subject matter argument. Commonly, the following argument markers are used to express this form of subject matter argument:

with
of
out of
from

Direction Arguments

Direction arguments identify the direction of movement expressed by the action of the dynamic verb and some other argument:

- a) He went outside.
- b) He went to the store.

They occur in complement position with transitive verbs that identify motion: walk, run, ride, etc. In such cases they are the first argument in complement position. They can also appear in predications that have dynamic transitive verbs.

- c) He took the car to the garage.
- d) He rode his horse east.

In such cases they are commonly the second argument in complement position. When nouns are direction arguments they are usually introduced by one of the following argument markers:

at, from, in, out, on, by, above, off, under, about, around, over, on top of, below, behind, inside, past, through, throughout, across, alongside, near, down to, up, out of, and up to

Some nouns that are names of specific places can be used as direction arguments without an argument marker:

He ran home.

More commonly, direction arguments that are not introduced by argument markers belong to a small closed class of adverbs which include the following:

outdoors, outside, out, overboard, overland, overseas, somewhere, south, north, east, west, there, here, far, up, uphill, upstairs, aboard, ahead, anywhere, ashore, astern, away, back, on shore, nearby, beneath, down, downhill, downstairs, eastward, elsewhere, everywhere, indoors, inside, and nowhere

Object Arguments

Objects are the semantically most neutral arguments that are not introduced by an argument marker and are in complement position to a dynamic verb.

I like Mary.

Basically, any argument: 1) in complement position to a dynamic verb; 2) that can not be classified as one of the previously described arguments and 3) is not introduced by an argument marker is classified as an object argument.

State Arguments

Arguments that identify the state of being of another argument are classified as state arguments:

- a) He was forlorn.
- b) He was sleepy.
- c) The sleepy baby . . .

State arguments identify a characteristic that is considered a temporary but perhaps recurring condition of another argument. As example a and b illustrate, state arguments commonly occur in complement position in stative predications. They can also appear in prenoun position (example c).

There are a number of different word types that can be stative arguments. Commonly, verbs in the past participial form are used.

He was tired.

Verbs that can be stative arguments belong to a limited class which cannot be used in the present progressive tense. Note that the following is illogical:

He was being tired.*

Actually, these verbs possess more adjective characteristics than verb characteristics. Recall the characteristics of an adjective from chapter 2:

- 1) They can occur before a noun and name an attribute of the noun:

The tired man

- 2) They can occur after a stative verb:

He is tired.

- 3) They can be premodified by an intensifier:

He is very tired.

- 4) They can take comparative and superlative forms:

more tired

most tired

I will consider verbs that meet the four conditions above plus a fifth condition that they cannot be stated in the present progressive tense adjectives rather than verbs:

There is a small group of adjectives, commonly called a adjectives, which are also used as stative arguments:

ablaze, afloat, afraid, aghast, alert, alike, alive, alone, aloof, ashamed, averse, awake, and aware

* Indicates ungrammatical construction

Like the set of verbs (adjectives) previously mentioned, they can not be used with a stative verb in the present progressive tense.

He was being aware.*

There is another group of adjectives, commonly used as stative arguments, which can appear with verbs in the present progressive tense. These include:

abusive, adorable, awkward, brave, calm, careful, careless, cheerful, clever, complacent, conceited, disagreeable, dull, enthusiastic, extravagant, faithful, foolish, friendly, funny, generous, gentle, good, greedy, hasty, helpful, impudent, irritable, irritating, jealous, kind, lenient, loyal, mischievous, naughty, nice, noisy, obstinate, patient, playful, reasonable, rude, sensible, serious, shy, sleepy, slow, spiteful, stubborn, stupid, suspicious, tactful, talkative, thoughtful, tidy, timid, troublesome, unfaithful, unscrupulous, untidy, vain, vicious, vulgar, wicked, and witty

Class Argument

Class arguments identify the general set or class of elements another argument belongs to.

- a) He is an Italian.
- b) He is a politician.

Class arguments are always nouns and can be in complement position with a stative verb (examples above) or can be in prenoun position.

The Italian man . . .

They can also be what are called in traditional grammar object complements and appositives:

We elected Bill president.

Bill, my friend, is a lawyer.

The group of nouns that can be class arguments is large but restricted to those that identify groups of people/things.

Standard/Comparison Arguments

Standard/comparison arguments often appear as the second complement in stative predications.

He is taller than Bill.

He is tall for an Italian.

He ran more quickly than Bill.

In such situations their function is to establish a frame of reference with which to compare or contrast the information presented in the predication. Standard/comparison arguments may also occur in dynamic predications when those predications have an adverb of manner.

He played well for a man with a broken leg.

Standard/comparison arguments are usually nouns accompanied by one of the following argument markers:

for
like
as
just as
as _____ as
than
more (less) _____ than _____

Owner/Possession Arguments

These arguments identify the owner or possessor of another argument.

- a) The car is mine.
- b) The car is Bill's
- c) It is my car.

As examples a and b illustrate, owner/possessor arguments can appear in complement position in stative predications or in prenoun position (example c) in stative or dynamic predications. When in complement position, they take the form of a noun in the genitive case or one of the following pronouns: mine, yours, ours, his, hers, its, theirs. When in

pronoun position they take the form of a noun in the genitive case or one of the following: my, your, his, her, its, our, their, and whose. Occasionally, the argument marker of is used to signal an owner/possessor argument.

A friend of mine went fishing.

It is important to note that of can be used as a marker for subject matter arguments and owner/possessor arguments. A test to determine whether an argument preceded by of is a subject matter argument or an owner/possessor argument is to move the argument to the front of the preceding noun and state it in the genitive form. If this can be done without destroying the meaning of the argument it should be classified as owner/possessor.

Nonrelative Time Arguments

These arguments identify the "nonrelative time" of an entire predication (example c) or of another argument (examples a and b).

- a) The dance was Friday.
- b) The dance on Friday was fun.
- c) They danced on Friday.

To understand the concept of nonrelative time we must also consider the concept of relative time which is discussed in depth in Chapter 6. The semantic function of a nonrelative time argument is to refer to some time in general. Relative time on the other hand, is a reference to the specific time of another predication. To illustrate relative time, consider the predications below:

Before Bill went to school, he had breakfast.

Here there are two predications:

- a) Bill went to school.
- b) He had breakfast.

The word before (called a relationship marker in this grammar) establishes a temporal relationship between predications a and b; b happened before a. The important point here is that the

time of a is related to the time of b; in other words, to understand the time of a we must "relate back" or refer back to the time of b. Now let us consider nonrelative time.

They played baseball on Saturday.

Here the nonrelative time argument Saturday does not refer back to another predication but to some generalized point in time. The reference is exophoric--out of the context of the predication. Herein lies the difference between relative and nonrelative time. When a word is used which indicates relative time, it directs the reader or listener back to another explicitly stated predication; when an argument is used which indicates nonrelative time, it does not force the reader or listener to relate back to another predication but conveys temporal information beyond the context of the stated predications.

When nonrelative time arguments occur in stative predications they are in complement position and identify the time of the described argument.

The dance was Saturday.

Usually the described arguments in such constructions name events (eg. dance, fair, part, etc.)

Nonrelative time arguments can also appear in dynamic predications. In such cases they appear in a variety of positions.

Bill and Sally went to the dance Saturday.

They danced Saturday.

Commonly nonrelative time arguments are one of the following adverbs:

early, late, now, nowadays, presently, instantly, momentarily, soon, already, today, tomorrow, eventually, immediately, lately, once, recently, suddenly, eventually, presently

A few of these adverbs can be in prenoun position, eg. (the late show).

Nonrelative time arguments can also be nouns which name specific times or dates. (eg. Sunday, Monday, March, April,

etc.) When nouns are used they are commonly introduced by one of the following argument markers:

at
on
before
after
since

Relative Time Arguments

In general relative time relationships are signaled by relationship markers (not argument markers) and are considered nonargumental relationships--relationships between predications which do not require a shared argument. For example, consider the following:

Bill went to school after he had breakfast.

After signals the relative time relationships between the preceeding and following predications. It is a relationship marker and does not perform an argumental function within either of the predications. There are, however, four wh-words that perform argumental functions within a predication and signal relative time relationships between predications. They are: when, whenever, while, and then. Each of these is classified as relative time arguments and signal a type of nonargumental relationship called concurrent action (described in depth in Chapter 6):

I

- a) He came (time)
- b) (when) I wasn't there

II

- a) He came (time)
- b) (while) I was taking a shower.

III

- a) I will come (time)
- b) (whenever) I get done.

IV

- a) Bill left Chicago (time)
 - b) it was then
 - c) (that) he found himself.
-

(The relationship between b and c in set IV above will be explained in Chapter 6)

Note that there is an understood time argument in each of the a predications above. This will become more clear when we discuss wh-word argumental relationships in Chapter 5. For now it is sufficient to point out that when, while and whenever are always classified as relative time arguments within a predication. Then can be a relative time argument but it may also be classified as a relationship marker. This distinction is explained further in chapters 5 and 6.

Duration Arguments

Duration arguments identify how long the action expressed by an entire predication or another argument continues:

- a) The noise was incessant.
- b) He talked incessantly.

Like nonrelative time arguments, they can appear in complement position in stative or dynamic predications. They can also appear in prenoun position.

The incessant noise bothered me.

When they appear in complement position in stative predications or in prenoun position, one of the following adjective forms is commonly used:

constant, continual, continuous, incessant, permanent,
frequent, regular, infrequent, irregular, occasional,
periodic, rare, sudden, brief, temporary, common,

invariable, normal, usual, customary, habitual, long

When they appear in dynamic predications one of the following adverb forms is commonly used:

again, another time, once, twice, always, constantly, continually, ever, incessantly, permanently, frequently, often, regularly, repeatedly, infrequently, irregularly, occasionally, periodically, rarely, seldom, sometimes, never, always, awhile, briefly, indefinitely, momentarily, temporarily, lately, recently, hourly, daily, nightly, weekly, quarterly, biannually, commonly, invariably, usually, customarily, generally, habitually, over, over again, once, twice, three (four, etc.) + times.

Nouns can also be duration arguments when introduced by one of the following argument markers: for, during, until, in, through, throughout, from _____ to, per, all _____ long.

- a) They danced throughout the evening.
- b) I'm in this for the duration.
- c) They danced from dawn to dusk.

Location Arguments

Location arguments identify the position in space of another argument or of an entire predication.

- a) The car was near the fence.
- b) The car near the fence is mine.
- c) They played their final game at the stadium.

Location arguments can appear in dynamic or stative predications. In stative predications they are commonly the complement describing the described argument (example a). In dynamic predications they can take a number of positions depending on whether they describe the location of the entire predication or the location of a specific argument in the predication.

The tree next to my bedroom fell during the storm.

They played in the grass.

Commonly, the pronouns there and here or one of the following adverb forms is used as a location argument:

inland, ashore, inside, near, nearby, outdoors, outside, overhead, overboard, overseas, somewhere, south, there, underfoot, underground, underneath, up, uphill, upstairs, west, within, aboard, ahead, anywhere, ashore, astern, away, back, below, beneath, beyond, down, nowhere, downhill, downstairs, east, north, south, elsewhere, hereabouts, and indoors

Some of these adverbs may be used in prenoun position:

The inland missile site was almost impregnable.

Nouns can also be used as location arguments when they are used with one of the following argument markers:

at, from, in, out, on, underneath, by, above, over, on top of, beneath, between, inside, near, opposite, under

The cat was under the porch.

Quality

Quality arguments are the semantically most neutral type of argument that can appear in complement position in a stative predication or in prenoun position.

He was tall.

The tall man . . .

Basically, any argument that can be a complement in a stative predication and can occur in prenoun position but cannot be classified as one of the other argument types will be considered a quality argument. For the most part, quality arguments are adjectives that identify an attribute that is considered a nontransitory characteristic of the argument it describes. The category of quality argument will also be used to describe noun arguments which identify characteristics and which are introduced by the argument markers with or without.

He was a man with pride.

He was a man without a conscience.

Like class arguments quality arguments can be object complements:

He painted the house white.

Existence Arguments

Existence arguments are a special class limited to the use of there and it in subject position in stative predications when there and it are not used to refer to some specific argument.

There was a boy

It was raining

In such circumstances there and it signal exophoric reference; reference to the general situation surrounding the information presented in the predication.

Situation Arguments

Situation arguments represent a residual category for any argument that is introduced by an argument marker and can not be classified as another argument type.

I saw him in person.

He was on vacation.

In summary, there are 20 different types of primary arguments which can occur within a predication. They are:

- 1) agent
- 2) instrument/means
- 3) stimulus
- 4) described
- 5) affected
- 6) recipient
- 7) subject matter
- 8) direction
- 9) object
- 10) state
- 11) class
- 12) standard/comparison

- 13) owner/possessor
- 14) nonrelative time
- 15) relative time
- 16) duration
- 17) location
- 18) quality
- 19) existence
- 20) situation

Of these, some can appear in dynamic predications only; some can appear in statives only and some can appear in both. Of those that can appear in statives, some can also appear in prenoun position. These syntactic constraints on the various argument types are summarized below:

Argument Types	Can Appear in Dynamics	Can Appear in Statives	Can Appear in Prenoun Position
agent	Y		
instrument/means	Y		
stimulus	Y		
described		Y	
affected	Y		
recipient	Y		
subject matter	Y	Y	
direction	Y		
object	Y		Y
state	Y	Y	Y
class	Y	Y	Y
standard/comparison	Y	Y	
owner/possessor	Y	Y	Y
nonrelative time	Y	Y	Y
relative time	Y	Y	Y
duration	Y	Y	Y
location	Y	Y	Y
quality	Y	Y	Y
existence		Y	
situation		Y	

Argument types are also restricted as to the parts of speech they may include. Basically all arguments discussed in this chapter may be either a noun, pronoun, adjective, adverb, argument marker and noun or a special limited class of words (e.g. wh-word, there, it). These syntactic constraints are summarized below.

Argument Type	Can Be Noun/Pro With No Argument Marker	Can Be Noun/Pro With Argument Marker	Can Be Adverb	Can Be Adjective	Special Limited Class
agent	y	y			
instrument/means	y	y			
stimulus	y	y			
described	y				
affected	y				
recipient	y	y			
subject matter		y			
direction	y	y	y		
object	y				
state				y	
class	y				
standard/comparison		y			
owner/possessor	y	y			
nonrelative time	y	y	y		
relative time					y
duration			y	y	
location		y	y		
quality		y		y	
existence					y
situation		y			

I should note here that even though my classification of arguments pertains to nouns, adjectives, adverbs, etc., it is the verb in a predication which determines the type of arguments that can occur in the predication. That is, certain verbs can take only certain types of arguments. For example, the verb love can take agent and stimulus arguments but can not take an instrument/means argument. No doubt, a more thorough classification of the verbs in the English language, especially dynamic verbs, would greatly increase the number of argument types. For example, we could have established an argument category called "message" to describe the lexical items that follow such verbs as say and tell. Although more argument categories would increase the specificity of the grammar, it would also significantly increase its complexity. Since the purpose of this grammar is language analysis, I strive for a blend of specificity and ease of argument identification. The argument categories discussed do provide a great deal of information within the context of a system that is easy to administer. Again, specific rules for determining argument types when meaning is not obvious are presented in Chapter 7.

UNDERSTOOD PREDICATIONS

As was stated in the beginning of this chapter, a predication is operationally defined as an explicitly stated verb with accompanying arguments. There are two exceptions to this rule:

Exception #1: A predication will be "understood" where any portion of a verb phrase occurs:

Question: Have you been running?

Answer: I have (been running).

Exception #2: A predication will be understood as accompanying the words yes, no, maybe (or similar expressions) as responses to a question:

Question: Are you going to the dance?

Answer: Yes. (I am going to the dance.)

CHAPTER 4

SECONDARY ARGUMENTS

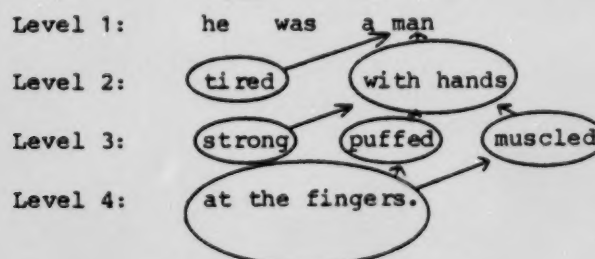
From an intuitive point of view there are sharp distinctions among the uses of different argument types. Consider the following:

He was a tired man with strong hands, puffed and muscled at the fingers.

The arguments in this predication are:

Predicate: was
 Described: He
 Class: man
 State: tired
 Quality: with hands
 Quality: strong
 State: puffed
 State: muscled
 Location: at the fingers

Some of these arguments are necessary for the logical completeness of the predication; others are not. Specifically the predication would make no sense without He and man. Arguments that are necessary to the logical completeness of the predication are called primary arguments. Primary arguments are related to one another in the manner specified by the verb and the argument types. Secondary arguments are related to other arguments or specifically to the verb. For example the quality argument strong above is related to the argument hands not to any other argument in the predication. I will use the concept of "argument levels" to differentiate which element an argument is attached to. For example we could diagrammatically portray the arguments in the predication above in the following way:



The arrows (called "relationship arrows") indicate that the arguments tired and hands are related to the argument man which is a level 1 argument; strong, puffed and muscled are related to hands which is a level 2 argument; fingers is related to puffed and muscled which are level 3 arguments. In Chapter 7 I will consider some language analysis uses for this type of argument "mapping". The point here is that within a predication arguments can occur at different levels. Arguments at the first level are those that are absolutely necessary to the logical completeness of the predication. Without them the predication would not make sense. The levels of the other arguments are defined by what they related to.

Arguments, then, can be classified as to type and level. All of the arguments mentioned in Chapter 3 can be used as first level or primary arguments. Many, not all, of them can be used as secondary or lower level arguments. Those that can be used as secondary arguments are:

Stimulus: He was tired from the trip.

Subject Matter: They talked about Paul.

Standard/Comparison: He is dark for an Irishman.

State: The tired man slept.

Class: The Chinese ambassador was here.

Agent: He was hit by Bill.

Instrument/means: He was hit with an eraser.

Owner/possessor: He was a friend of mine.

Nonrelative Time: He went to the dance Saturday.

Relative Time: . . . when he came

Duration: The incessant noise bothered him.

Location: He ran in the park.

Quality: He owns a red car.

Situation: He was outstanding in everything.

If you delete the underlined arguments and their argument markers in each of the examples above the predication will still make sense illustrating that the underlined arguments are not necessary to the completeness of the predication. This is not to say that they are unimportant to the message conveyed in the predication. It is these second, third and fourth level arguments that add necessary detail to a message.

ARGUMENTS THAT ARE NEVER FIRST LEVEL

There are a number of argument types that are always secondary arguments, they are: 1) Attitudinal, 2) Exclamations, 3) Intensifiers/Diminishers, 4) Manner, 5) Accompanier, 6) Specifiers. We will briefly consider each type.

Attitudinal Arguments

Attitudinal arguments represent the attitude of the speaker or writer toward the predication as a whole:

Frankly, Bill is not a good writer.

They can be in a number of positions within the predication.

Bill is, frankly, not a very good writer.

Attitudinal arguments are always adverbs; semantically they can be subclassified in the following ways:

Truth

actually, certainly, clearly, definitely, evidently, obviously, plainly, really, honestly, literally, simply, just, admittedly, definitely, surely, undeniably, undoubtedly, unquestionably, basically, essentially, fundamentally, candidly, flatly, frankly, bluntly, honestly, seriously, strictly, truly, truthfully

Lack of Truth/Doubt

arguably, allegedly, conceivably, doubtless, maybe, perhaps, possibly, presumably, reportedly, supposedly, seemingly, ideally, superficially, technically

Expected or Unexpected

amazingly, astonishingly, curiously, incredibly, ironically, oddly, remarkably, strangely, unexpectedly, appropriately, inevitably, naturally, not unnaturally, predictably, typically, understandably, even

Fortunate

fortunately, unfortunately, happily, unhappily, luckily, unluckily, sadly, tragically, thankfully

Satisfaction/Dissatisfaction

annoyingly, delightfully, disappointingly, disturbingly, refreshingly, regrettably

Correctness

correctly, incorrectly, justly, unjustly, rightly, wrongly

Wisdom

foolishly, prudently, reasonably, artfully, cleverly, cunningly, unreasonably, sensibly, shrewdly, wisely, unwisely

Other Attitudes

please, conveniently, hopefully, mercifully, preferably, significantly

Attitude arguments can appear in both statives and dynamics:

He foolishly climbed to the top of the mountain.

Ironically he is the one best suited for the job.

As was stated previously, attitude arguments can appear in a variety of positions. A good test to determine if an adverbial argument is an attitudinal is whether or not it can be moved to the beginning of the sentence. If it cannot be moved without changing meaning, then it is not an attitudinal. To illustrate consider the following:

He was ironically tired.

Here the argument ironically is one of those listed above. It

can also be moved to the beginning of the sentence without changing its meaning.

Ironically, he was tired.

But consider the following:

He was honestly tried for his crime.

Honestly is also listed above as a possible attitudinal argument. We can test it by moving it to the beginning of the sentence.

Honestly, he was tried for his crime.

Here we have changed the meaning of the predication; consequently, honestly is not classified as an attitudinal argument modifying the entire predication but a manner argument modifying the verb in the predication.

Exclamation Arguments

Exclamation arguments are always filled by interjections and represent a purely emotive statement on the part of the speaker or writer:

Boy! Was he tired.

Wow! That was a nice hit.

Some of the more common exclamation arguments are:

wow	yippee
ha	hurray
oh	
ow	
ugh	
ouch	
hey	
ho	

Intensifying and Diminishing Arguments

As their name implies the purpose of intensifying/diminishing arguments is to intensify or diminish the impact of the information presented in a predication. Intensifiers/

diminishers are always adverbs. Semantically they can be subcategorized in the following ways:

Generalizers

approximately, broadly, crudely, generally, roughly, simply

Exclusivizers

alone, exactly, exclusively, just, merely, only, precisely, purely, simply, solely

Particularizers

especially, largely, mainly, mostly, notably, particularly, primarily, specifically, at least, in particular

Compromisers

kind of, sort of, quite, rather, enough, sufficiently, more or less

Diminishers

mildly, moderately, particularly, partly, slightly, somewhat, in part, in some respects, to some extent, a little

Minimizers

a bit, barely, hardly, scarcely, little, in the least, in the slightest, the least bit, the slightest bit

Approximators

almost, nearly, practically, virtually, as good as

Maximizers

absolutely, altogether, completely, entirely, extremely, fully, perfectly, quite, in all respects, thoroughly, totally, utterly, most widely

Boosters

very, badly, bitterly, deeply, enormously, far, greatly,

highly, intensely, much, severely, sure, so, terribly, well, more, a great deal, by far, too

Many of these arguments can take a variety of positions. When they occur in stative predications with adjective arguments they frequently are placed before the adjective:

He was very tall.

He was a bit careless.

When they appear in dynamic predications with manner arguments they commonly appear before the adverb of manner:

He runs rather awkwardly.

Still others appear within the verb phrase of dynamic predication:

He was severely criticized for his actions.

Intensifying/diminishing arguments can also be used as modifiers attached to argument markers and relationship markers.

They came just before dawn.

Here the diminisher just modifies the argument marker before.

Manner Arguments

Manner arguments identify the manner in which the action in a predication is accomplished, or they describe the characteristics of an adjective:

He ran quickly.

He was sufficiently tall.

To a large extent this category is a catch all or residual category for adverbs. That is, any adverb that cannot be classified as another argument type is classified as a manner argument. We will also include in this category nouns that indicate manner and are introduced by the argument marker with or without:

as predeterminers:

- . . . all the money
- . . . all of the money
- . . . half the money
- . . . half of the money

Demonstratives

The pronouns this, that, these and those when they appear in prenoun position are considered specifier arguments:

He wanted this book.

Their purpose is to identify a specific argument.

Cardinal Numbers

The cardinal numbers include all numerals in the arabic system:

one, two, three. . .

They commonly appear in prenoun position and restrict the quantity of the noun they modify:

He had four apples.

Like the predeterminers they can appear with the particle of:

She had four of the cards in her hand.

Ordinal Numbers

Ordinal numbers include the following up through infinity:

first, second, third, fourth, etc. . . .

When used as specifier arguments they always appear in prenoun position.

He was the third runner from the last.

Closed Class Quantifiers

These include a small group of pronoun forms:

many, most, more, few, fewer, fewest, little, less, least,
several, both, other, another

When used as specifiers they appear in pronoun position. They can also be used with the particle of:

Each of the candidates was good.

Each apple is individually wrapped.

Open Class Quantifiers

Open class quantifiers consist of a head noun like lot, deal or number along with the particle of:

He had a lot of money.

He had a great deal of money.

When coding specifier arguments that utilize the particle of the entire phrase will be considered as one specifier argument.

Measures

These specifier arguments always have the form:

a _____ of

He shoveled a foot of snow.

In many cases the initial determiner a is replaced by a cardinal number:

He shoveled ten feet of snow.

Specifying arguments which indicate measure include:

Length:

a foot of
a yard of

Area:

an acre of

Volume:

a pint of
a quart of

Weight:

a pound of
a ton of

General Partitives

General partitives also have the form a _____ of as do measures. General partitives, however, do not specify exact amounts or quantities.

a piece of pie
a slice of ham
a bit of news
an item of news

ARGUMENT COMPOUNDING

Before leaving the discussion of the predication we will consider one other way that arguments can be added to a predication other than by levels. Another way of adding arguments is via argument compounding. To illustrate consider the following:

She was tall, dark and beautiful.

The four arguments in this predication are:

she:	described
tall:	quality
dark:	quality
beautiful:	quality

The basic pattern in this predication is: described + verb + quality. The quality argument has simply been compounded. Compounding, then, is the addition of an argument

type already expressed in the predication. There are three basic ways that an argument can be compounded. We will consider each.

Addition

By far addition is the most common method of compounding an argument. It is generally accomplished by stating the added argument next to the one it duplicates. Usually and or as well as is used at the end of a list of added arguments.

She was tall, dark and beautiful.

He was tired as well as hungry.

Antithesis

Compounding via antithesis conveys the message that the added argument is the negative counterpart of the argument to which it is attached.

He was tired not hungry.

Here the message is that the argument hungry "is not" a quality of the described argument he. Usually the following markers are used to express antithesis: but, not, and yet.

He was tired but happy.

Mike not Bill won the fight.

He was tired yet happy.

Alternative

When compounding is accomplished using alternative the message is conveyed that one or possibly neither of a set of arguments are of a specific argument type:

He will be either happy or sad.

Here either happy or sad is a quality argument describing the argument he. Commonly the following markers are used:

either . . . or
 neither . . . nor
 whether . . . or
 rather . . . than
 or

He will be either happy or sad.

He will be neither happy nor sad.

Give it to Bill or Mark.

Note that when neither . . . nor is used as the argument marker the message is conveyed that both arguments are negative counterparts of the intended argument type.

Argument Compounding vs. Coordinate Predications

It is important to note the difference between compound arguments and coordinate predications. To illustrate the differences consider the following:

- a) He is tired and hungry.
- b) He will run and jump.

In a there is a compound state argument. In b there are two coordinate predications that have been joined together:

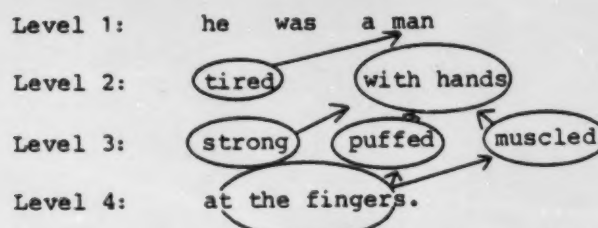
He will run.

He will jump.

In Chapter 6 we will consider the concept of coordinate predications in depth. For now I will simply point out that we will consider a predication as existing only when there is an explicitly stated verb (excluding the exceptions stated in Chapter 3). The addition of an argument without an accompanying verb will be considered the addition of an argument, not an entire predication. This of course makes the grammar totally a surface level grammar. That is, we postulate no underlying predication when a verb does not exist. This in no way diminishes the power of the grammar to describe semantic relationships between concepts. To illustrate, let us contrast the type of analysis that would result by using surface and deep structure models on the following:

He was a tired man with strong hands, puffed and muscled at the fingers.

As we have already seen that the diagrammatic representation of the various arguments and their levels in this predication is:



The relationship arrows indicate that tired and with hands are states and qualities (respectively) of the argument man: strong, puffed, and muscled are qualities and states of hands: at the fingers is a location argument with an accompanying argument marker describing the location of the arguments puffed and muscled. If we took a deep structure approach to describing this set of concepts we might postulate a number of underlying predications or propositions or kernel sentences depending on our linguistic stance. Here it is sufficient to point out that all deep structure theorists would hypothesize that the predication above was derived from a series of predications each of which contained only what I have called first level arguments. Those predications in their deep structure might be:

- a) He was a man.
- b) The man was tired.
- c) The man had hands.
- d) The hands were strong.
- e) The hands were puffed.
- f) The hands were muscled.
- g) The puffing was at the fingers.

Deep structure proponents would theorize that these underlying predications were transformed to their surface structure representations through a series of operations which deleted repeated arguments and verbs and embedded the remaining arguments within other predications. For example, a deep

structure model would postulate that "the man was" in predication b was deleted and the argument tired embedded in predication a; "the man had" in c was deleted and the argument hands along with the added argument marker with was embedded in a; etc. What a deep structure analysis does is to clearly illustrate the interrelationship among arguments. That is we clearly see that tired is a state of the argument man and that at the fingers is the location of the arguments puffed and muscled. But this is precisely the information that is conveyed via the relationship arrows and the argument levels in our predication diagram. The concept of argument levels and the use of relationship arrows, then, conveys the same semantic information that the use of deep structures does. A deep structure approach contains much excess baggage as a language analysis tool--baggage in the form of repeated arguments (eg. "the man was, the man had, the hands were . . ."). The grammar presented here provides the same information as a deep structure grammar in a much more efficient manner--efficiency being a prime consideration in language analysis.

CHAPTER 5

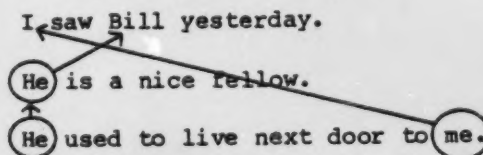
ARGUMENTAL RELATIONSHIPS BETWEEN
PREDICATIONS

Thus far we have considered some of the semantic relationships that exist among arguments within a predication. But discourse by definition is a set of logically connected predications. What are the ways, then, that predications are bound together to form cohesive units? There are two ways cohesion in discourse is accomplished--through argumental and nonargumental relationships. In this chapter we will consider argumental relationships--the most frequently used method of connecting predications.

Two predications are connected argumentally when an argument in one refers to something in the other. To illustrate consider the following:

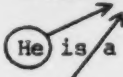
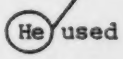
- a) I saw Bill yesterday.
- b) He is a nice fellow.
- c) He used to live next door to me.

The argument he in predication b refers to the argument Bill in predication a establishing an argumental relationship between the two. The same type of reference occurs in c; the pronoun he in c refers to he in b which refers to Bill in a. Predication c also has a second argumental tie to predication a in the form of the argument me which refers to the argument I in predication a. We can "map" the argumental relationships among these predications by connecting related arguments with what I will call "reference lines" or "reference arrows".



Throughout this chapter I will use some conventions and terms which require explanation here. The argument that is referred to by another argument will be called the "referent" or "antecedent" argument. For example in the predications above, Bill in a is the referent of he in b which is the

referent of he in c. I will also use the convention of drawing reference lines back to the nearest referent. For example I could have drawn reference lines from he to Bill in predication b and c.

- a) I saw Bill yesterday
- b)  He is a nice fellow.
- c)  He used to live next door to me.

This is a highly useful type of mapping which will be developed in Chapter 8. In this chapter reference lines will pass through the nearest referent. Finally, I will use the term "mapping" to describe the drawing of reference lines among predication. In later chapters we will see that the mapping of argumental relationships among predication is a powerful language analysis device.

As the examples above illustrate the working force behind argumental connections is reference--an argument in one predication referring to something in another predication. Throughout this chapter I will use the terms "argumental relationship" and "argumental reference" interchangeably.

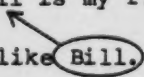
TYPES OF ARGUMENTAL REFERENCE

There are a number of different types of argumental reference that can be used to create argumental relationships among predication.

Same Word Reference

The most simplistic type of reference used to connect predication argumentally is same word reference. That is, the speaker or writer simply uses the same word to represent the argument in both predication:

Bill is my friend.

I like  Bill.

Commonly the definite article the or the demonstrative pronouns this, that, these and those used as specifier arguments precede the argument that has a same word relationship with the referent.

Jana owns a cat.

The cat likes to eat grasshoppers.

Here I restrict the category of same word reference to nominals only. Consequently the argument beautiful in a and b below are not an example of same word reference:

- a) Mary is beautiful.
- b) Sally is beautiful.

Pronoun Reference

When pronoun reference is used to connect predications, the speaker or writer uses a pronoun to represent a repeated argument from another predication:

I like Bill.

He is my friend.

By far this is the most common method of connecting predications argumentally. Here I am restricting the pronouns used for this form of argumental relationship to the following: I, me, you, we, us, he, him, she, her, they, them, it; this, that, these, those, there, here, same. The first twelve pronouns listed above have fairly simple usage patterns. Those patterns are described below:

Pronoun	Element Referred to by Pronoun
I, me	speaker only
you	addressee with/without other persons
we, us	speaker and other persons
he, him	other person (male)
she, her	other person (female)
they, them, it	other persons/ object

These pronouns signal a pronoun relationship only when they appear in noun position. That is, some of them may also appear in prenoun position (eg. her coat . . .). In such cases they signal another type of argumental relationship.

This, that, these and those signal a pronoun relationship only when they are used in noun position and refer to a specific argument or set of arguments. This most commonly occurs in the oral language when the speaker is making reference to an object that is known by the listener and generally in the immediate vicinity of the conversation.

I want that.

As shall be explained in a subsequent section this and that in noun position more commonly signal another type of argumental relationship.

There and here are a special subset of pronouns used to refer to previously stated locations or directions. (I am not including in this discussion there used as an existence argument).

Bill went to Chicago.

There he met his true love.

Above the pronoun there refers to the referent direction argument, Chicago. Contrast this with the use of there in the predication below:

a) Bill ran yesterday (location)

b) Mark was there.
here.

There refers to the location in which the event "Bill ran" occurred even though there is no explicitly stated location argument. I am assuming, then, that predication which describe events have a location argument whether explicitly stated or not. In transformational grammar terminology I am assuming that there is a deep structure location argument in all event predications. In the example above, the dynamic predication "Bill ran" must occur at some place. This allows for the use of there or here to refer to the unstated location in which the event occurred. (Throughout the text I will use the convention of representing "understood" arguments by enclosing them in parentheses.) Not all dynamic predications have this property.

Consider the following:

Mark disliked Sally.

Bill was there.

These predications make no sense unless one infers a considerable amount of information. The event "Mark disliked Sally" is not one normally associated with a physical activity in some location.

Finally the pronoun same signals pronoun reference when it refers to an explicitly stated argument.

Jana ordered coffee.

Bob ordered the same.



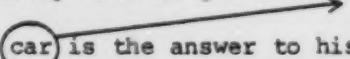
We shall see in Chapter 6 that same can also be used to signal a specific type of nonargumental relationship.

Synonym Reference

Synonym reference occurs when an argument in one predication is represented by a synonym in another predication:

Yesterday Bill bought a new automobile.

This car is the answer to his dreams.



As this example illustrates, this, that, these and those used as specifier arguments commonly precede the noun used for synonym reference. As was the case with same word reference synonym reference is restricted to nominals. Consequently the arguments beautiful and gorgeous below are not examples of synonym reference:

Mary is gorgeous.

Sally is beautiful.

Metaphoric Reference

Metaphoric reference is similar to synonym reference except that a direct synonym for a repeated argument is not

used. Instead a word or phrase not generally regarded as a synonym for the repeated argument is used:

Bill reads the newspaper every day.

This haven of information tells him many things.

Metaphoric reference is a powerful stylistic device primarily used in the written language. Again, the specifiers this, that, these, and those commonly precede the nominal used in metaphoric reference.

Generic Reference

Consider the following:

- a) Bill seemed very frightened about the operation.
- b) One would think he was a coward.

Here the pronoun one refers to a general but unstated set of people. The first time generic reference is used in a set of predication there is no specific argument it refers back to. (The reference is exophoric). Every other time generic reference is used I will assume that the reference is back to the initial use of the generic referent:

- a) Bill seemed very frightened about the operation.
- b) One would think he was having a transplant.
- c) One also finds this difficult to accept in him.

In general the understood subject in a gerund phrase will be considered generic unless the context makes the intended subject obvious:

Running is fun.

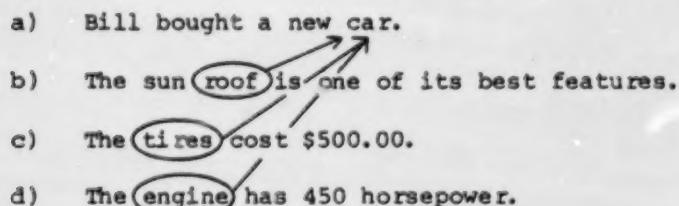
Here there are two predication.

- a) (G) running
- b) is fun

The embedded relationship a has to b will be explained in Chapter 6. Note the use of G in parentheses to represent the generic reference.

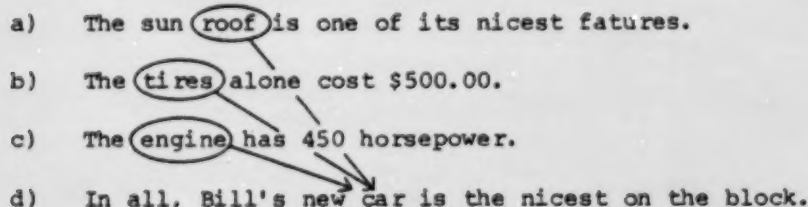
Related Argument Reference

Related argument reference occurs whenever an argument is used in one predication which is logically related to an argument stated in a preceeding predication. Again I restrict this type of reference to nominal arguments. To illustrate, consider the following:

- a) Bill bought a new car.
 - b) The sun roof is one of its best features.
 - c) The tires cost \$500.00.
 - d) The engine has 450 horsepower.
- 

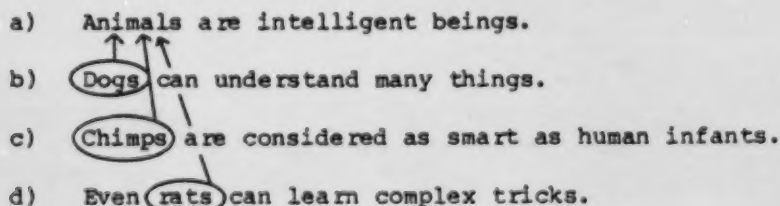
Here the arguments roof, tires and engine are all considered "related arguments" to car stated in predication a. There are four types of related argument relationships:

1) Part to Whole: The examples above illustrate part to whole, related argument reference. Here roof, tires, and engine are all parts of the whole car. This category is restricted to those objects which have physical parts. It is important to note that these parts can be stated prior to the whole. In such cases the reference is in a forward direction:

- a) The sun roof is one of its nicest fatures.
 - b) The tires alone cost \$500.00.
 - c) The engine has 450 horsepower.
 - d) In all, Bill's new car is the nicest on the block.
- 

As predication d above illustrates many times a noun in the genitive form preceeds the statement of the "whole".

2) Member of a Set of Class: To illustrate this type of related argument reference, consider the following:

- a) Animals are intelligent beings.
 - b) Dogs can understand many things.
 - c) Chimps are considered as smart as human infants.
 - d) Even rats can learn complex tricks.
- 

Above, dogs, chimps, and rats are members of the general set or class called animals. Reference to set or class membership occurs whenever specific set elements that have an identifiable set name are used. A common technique for signaling this type of argumental relationship is to state the argument naming the set or class first and the use of one of the following words to refer to the members of the set: each, both, few, nor, nothing, all, neither, either, some, any, the other, another. Some of these like some and any are most commonly used to refer to set concepts that cannot be divided into discrete parts:

I made coffee.

Bill wanted some.

(The reader should note that I am taking liberties here with the terms set and class which usually refer only to discrete collections of objects.) Others like other and another convey the meaning that a previously stated argument has a "twin", or that something exists quite like it.

Bill used the green boat.

Mark used the other.

All, neither, none, and nothing refer to all or none of the members of a set.

I made coffee.

Illona wanted none.

Finally cardinal and ordinal numbers may be used to signify set or class membership:

The players left after the game.

Two went directly home.

3) Ownership/Possession: In general owner/possessor arguments signal an ownership/possession form of related argument relationship.

Bill is nice.

His car is the best on the block.

Occasionally an owner/possession argument signals a part to

whole or member of a set related argument relationships:

- a) The car was very expensive.
- b) Its tires alone cost \$500.00.

- a) The team did win this year.
- b) Its quarterback was the best in the league.

4) General Function: The final type of related argument relationship is the most general. Basically it covers any entity related functionally to another argument. To illustrate, consider the following:

- a) The Olympics were once held in Los Angeles.
- b) The committee did a fine job that year.

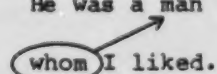
It is general knowledge that the event, the Olympics, is organized by a committee. Hence, the use of committee in b above establishes related argument relationship with Olympics in a.

Wh-Word Reference

Probably the most complex type of argumental reference is wh-word reference. When wh-word reference is used, a relationship is established between a wh-word in one predication and an argument in another predication. The wh-words I refer to here are: who, whom, which, that, what, when, while, where, how, however, why, whoever, whomever, whichever, whenever, wherever, and then. There are many different variations to wh-word reference. To begin the discussion, consider the following:

He was a man whom I liked.

This is the most common format for wh-word reference. There are two predications; one embedded in the other as a dependent clause with the wh-word in the embedded clause referring back to an argument in the main clause:

He was a man

 whom I liked.

A wh-word when used for wh-word reference (some can be used in other ways) will always perform these two functions. That is, it will always: 1) refer back to an argument in another predication, and 2) have an argumental role within its own predication. In the example above whom refers back to man in the main clause, and it serves as the object argument within the dependent clause. Below are examples of other wh-words used in similar ways:

- 1) Mary is the one that I like.

a) Mary is the one

b) that I like.

(that is the object argument of predication b)

- 2) Bill identified the man who stole the money.

a) Bill identified the man

b) who stole the money.

(who is the agent argument in predication b)

- 3) Mike knows a place where he can buy a car.

a) Mike knows a place

b) where he can buy a car.

(where is a location argument in predication b)

- 4) It was a day when nothing went right.

a) It was a day

b) When nothing went right.

(when is a relative time argument in predication b)

- 5) He knows the reason why I called.

a) He knows the reason

b) why I called.

(why is the stimulus argument in b)

6) It was a day for which they had waited many years.

a) It was a day

b) for which they had waited many years.

(which is the subject matter argument of b)

The argumental functions the wh-words in the examples above have within their own predication are most easily seen when the predications they are in are stated as independent rather than dependent clauses. Below I have reworded each of the six examples and stated both predications as independent clauses:

1) a) Mary is the one.

b) I like the one.

2) a) Bill identified the man.

b) The man stole the money.

3) a) Mike knows a place.

b) He can buy a car at the place.

4) a) It was a day.

b) Nothing went right on that day.

5) a) He knows the reason.

b) I called for the reason.

6) a) It was a day.

b) They had waited many years for that day.

The wording is awkward in some of the examples above (primarily because the position and types of arguments used for argumental connection are most commonly expressed using wh-word reference in our language), but they do illustrate that the wh-words stand for arguments that have a legitimate argumental function within their predications.

In many speaking/writing situations the wh-word is so obvious that it can be deleted:

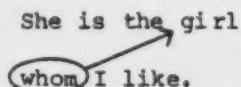
She is the girl I like.

The two complete predications here are:

She is the girl.

I like the girl.

Normally a wh-word would be used to represent the argument girl in the second predication:

She is the girl

 whom I like.

Because the argument girl is obvious in the second predication the wh-word representing it can be deleted and is considered understood by the listener/reader. There is a syntactic constraint on this form of wh-word deletion. It can be done only when the wh-word is not the subject of the embedded predication. In the example above the argument whom is the object argument in complement position in the embedded predication. If we tried to combine two predications in which the subject in the second predication was connected argumentally to another argument in the first predication, we would find that the wh-word could not be left out. To illustrate, consider the following:

I like the boy.

The boy is nice.

These two predications can be combined in the following way:

I like the boy who is nice.

We cannot however delete the wh-word and produce a grammatically correct sentence:

I like the boy is nice. *

Below are some further examples of deleted wh-words. To illustrate the existence of the wh-words in these predications I have used parentheses.

Mary is the one (that) I like.

Mike knows a place (where) he can buy a car.

I know a time (when) it is convenient.

I know the reason (why) he came.

Another form of deletion common to wh-word reference is the deletion of the argument that the wh-word refers to. To illustrate, consider the following:

He knows why I came.

This is the semantic equivalent of: "He knows the reason why I came." Here the referent, reason, has been deleted. Deletion of the referent argument within wh-word reference is commonly done when the words where, when, what, how, why, and who are used:

He came (at a time) when I was running.

He knows (the place) where I stayed.

He knows (the manner) how he left.

He knows (the reason) why he left.

He knows (the person) who did it.

He knows (the object) what I want.

When the wh-words how and what are used the referent argument is always deleted. For example it would be considered awkward in standard English to say "He knows the manner how it was done." When mapping the relationship between two wh connected predications where an element (either the referent argument or the wh-word) has been deleted, I will use the convention of enclosing the deleted element in parentheses to indicate that it is understood.

- 1) I know where he is.

I know (the place)

(where) he is.

- 2) He is the boy I like.

He is the boy

(whom) I like.

The wh-words whoever, whomever, whenever, whatever, however, and wherever are used when the referent argument is not only deleted but unknown to the speaker or writer. Consider the following:

Wherever John went is probably nice.

Here the underlying meaning of the two predications is:

John went to a place.

The place is probably nice.

Because the location argument place is not known by the speaker the wh-word wherever is used:

Wherever John went
↓
(place) is a nice place.

Note the forward direction of the reference arrow here. This occurs in wh-word reference when the embedded dependent clause comes before the independent clause. I am assuming that the speaker/writer intends for the listener to process the two clauses as a unit, consequently enabling the listener/reader to look for a referent for the wh-word after the wh-word is stated. Intuitively, this makes sense. A wh-word in isolation does not specify an argument only an argument type. The listener or reader must look for the specific argument in the surrounding context. Initially, the listener/reader probably refers back to previously stated predications. If no logical referent is found the processing then turns to the predications stated after the wh-word. To operationalize this assumption when mapping argumental relationships I will always draw reference lines from the wh to the referent--never from the referent to the wh-word. Below are some further examples of the use of wh-words with forward reference:

1) Whatever it is, I won't like it.

a) Whatever it is
↓
b) I won't like it.

2) Whoever it is should leave.

a) Whoever it is
↓
b) (person) should leave.

3) Whenever he comes is fine with me.

a) Whenever he comes

b) (time) is fine with me.

4) Whatever it was, it scared me.

a) whatever it was

b) it scared me.

5) Whoever he was, he was handsome.

a) Whoever he was

b) he was handsome.

Thus far in the discussion of wh-word reference I have considered only those cases in which the predication with the wh-word is expressed as a dependent clause embedded in the clause with the referent argument. By far this is the most common form of wh-word reference. There is a situation, however, in which two predications stated as separate sentences are argumentally connected via wh-word reference:

a) Bill bought a new car.

b) When did he do it?

The situation here is analogous to wh-word reference in which the referent argument is deleted. These two predications are semantically equal to:

a) Bill bought a new car (at a time).

b) When did he do it?

There is an understood nonrelative time argument in predication a. That argument is repeated in predication b; since the argument is unknown it is represented by the wh-word when in predication b thus establishing wh-word reference between a and b:

a) Bill bought a new car (time).

b) When did he do it.

Basically any time a wh-word question is stated as a separate sentence, its predication has wh-word reference with another predication:

- 1) Bill bought a new car. Why did he do it?
 - a) Bill bought a new car (stimulus)
 - b) Why did he do it?
- 2) Bill bought a new car. Where did he get it?
 - a) Bill bought a new car (place)
 - b) Where did he get it?

Wh-word reference, then can occur in two syntactic forms: 1) the wh-word may appear in a dependent clause which is attached to the clause with which it has an argumental relationship; 2) The wh-word may appear in a separate sentence.

Before leaving the discussion of wh-word relationship, it is important to note that not all the wh-words always signal wh-word relationships. Usually this problem occurs only with that, then, wherever, whatever, and however. To illustrate, consider the following:

She knows that I like her.

Here the two predications are:

- a) She knows _____
- b) I like her

Although this appears similar to some of the wh-word reference structures, it is not. The word that does not refer back to a specific argument in predication a, and it does not have an argumental function within predication b. Rather it functions as a relationship marker signaling a nonargumental relationship between the predications. (Again, nonargumental relationships are discussed in Chapter 6). The test for whether a wh-word signals wh-word reference is: 1) whether it refers to a specific argument and 2) whether it has a specific argumental function within its own predication. To reemphasize this point let us consider one other example of a clause with a wh-word which does not have a wh-word argumental relationship with another predication:

I will like him whatever he looks like.

Here the two predications are:

- a) I will like him
- b) whatever he looks like

The word whatever in predication b does have an argumental function within its own predication (it is standard/comparison argument) but it does not refer back to any argument in predication a. Hence, we conclude that these two predications do not use wh-word reference to establish an argumental relationship.

Deleted Subject Reference

Another way of establishing an argumental relationship between predications is through the use of deleted subject reference. I have already indicated that any time a verb phrase is embedded in a sentence it will be considered a separate predication. To understand how this is related to deleted subject reference, consider the following:

The boy running down the street likes the girl
sitting on the porch.

Here there are three predications:

- a) the boy likes the girl
- b) (boy) is running down the street
- c) (girl) is sitting on the porch

If we were to map the argumental relationship that exists among these three predications when each is stated as a separate sentence we would obtain:

- a) The boy likes the girl.
 - b) The boy is running down the street.
 - c) The girl is sitting on the porch.
-

When the subject in one predication refers back to an argument in another predication, that subject and the operator in the verb phrase may be deleted and the rest of the predication

attached to the previous predication producing what traditional grammarians call participial phrases:

The boy running down the street likes the girl
sitting on the porch.

I will call the type of reference used in such situations "deleted subject" reference. By definition, then, any participle or participial phrase is considered an example of deleted subject reference. Below are some further examples:

1) The defeated team went into the locker room.

a) the team went into the locker room

b) (team) defeated

2) A rolling stone gathers no moss.

a) A stone gathers no moss

b) (stone) rolling

Example #1 brings up an important point relative to deleted subject reference. Here I have classified defeated as an embedded predication. However, recall from Chapter 4 that in the example below tired, puffed, and muscled were considered as state arguments not as embedded predications.

He was a tired man with strong hands, puffed and
muscled at the fingers.

In this grammar puffed, tired, and muscled are not considered verb forms as they are used above. They are adjective forms acting as state arguments. Recall from Chapter 3 the five characteristics of verb forms that are classified as adjectives in this grammar:

1) They can occur before a noun and name an attribute of the noun:

the tired man

the muscled hands

the puffed hands

- 2) They can occur after a stative verb:

He was tired.

The hands were puffed.

The hands were muscled.

- 3) They can be premodified by an intensifier:

very tired

very puffed

very muscled

- 4) They can take comparative and superlative forms:

. . . more tired than before

. . . more puffed than before

. . . more muscled than before

- 5) They cannot be stated in the present progressive tense:

He was being tired. *

The hands were being puffed. *

The hands were being muscled. *

Hence, in this grammar tired, puffed and muscled do not qualify as verb forms and cannot be considered embedded predications. Defeated, on the other hand, is not an adjective, but a verb; this is illustrated by the fact that it can be stated in the present progressive tense:

The team was being defeated.

Deleted subject reference can also produce infinitives. Consider the following:

He left to stop crying.

The two predication here are:

- a) He left.
- b) He stopped crying.

The subject he in b has been deleted and the verb expressed as an infinitive and then embedded in predication a:

- a) He left
- b) (he) to stop crying

Gerunds may also be produced via deleted subject reference:

Bill likes running.

- a) Bill likes _____
- b) (Bill) running

However, as was stated in the sections of this chapter on generic reference, many times the deleted subject in a gerund or infinitive is generic.

- 1) To run is fun.
 - a) (G) to run
 - b) _____ is fun
- 2) Running is fun.
 - a) (G) running
 - b) _____ is fun

When this is the case the embedded predication is coded as having generic reference rather than deleted subject.

A final type of deleted subject reference occurs primarily in the spoken language between some wh-word question forms and their answers:

Question: What must Bill do now?

Answer: (Bill) Take his best shot.

Whole Predication Reference

Often an argument in one predication refers to an entire predication or entire set of predications not just to an argument in another predication:

- a) Bill hit Mark.
- b) This bothered Mark.

Here the argument this in predication b refers back to the action expressed in predication a. I will map such relationships in the following way:

- 1) a) Bill hit Mark.
- b) This bothered Mark.

This convention shows that the reference is to the entire predication not to a specific argument in the predication. Commonly the words it, this, that, and which are used to signal whole predication reference:

- 2) a) Bill hit Mark.
- b) Mark didn't like that.
- 3) a) Bill hit Mark.
- b) Mark didn't like it.
- 4) Bill hit Mark, which bothered Sally.
- a) Bill hit Mark
- b) which bothered Sally

This is probably the most flexible of the common whole predication markers. For example, it is sometimes used cataphorically to signal a relationship to a subsequent predication:

What I want to say is this: I like candy.

Oftentimes this and that are accompanied by another general word for a predication (eg. fact, event):

- a) Bill hit Mark.
 b) this fact bothered Mark.

Note that in these examples the reference words it, this, that, and which have an argumental function within their own predications. This indicates that the predications they refer to could be substituted as arguments in those predications. I have illustrated this below with the four previous examples:

- 1) That Bill hit Mark bothered Mark.
- 2) Mark didn't like that Bill hit him.
- 3) Mark didn't like that Bill hit him.
- 4) That Bill hit Mark bothered Sally.

When an embedded predication performs the function of an argument in a predication I will classify the relationship as something other than whole predication reference; that type of relationship is discussed in Chapter 6.

Occasionally here, there, so and not are used for whole predication reference:

- a) Bill quit school early.
 b) He was wrong there.
 a) Some people say _____
 b) there's going to be an earthquake,
 c) I think not.

Situational Reference

Situational reference occurs when one predication refers to the general situation in which a previous predication occurred. To illustrate, consider the following:

- a) The day was warm and friendly.
 b) There was not a cloud in the sky.

Here the argument there in b refers back to predication a. Situational reference is similar to whole predication reference in that an entire predication is referenced, but it is different in that the predication referred to does not nor could not have an argumental function within the second predication. For example in the illustration above we could not put predication a in place of there in b:

The day was warm and friendly was not a could in the sky.*

The purpose of situational reference is to describe the circumstance under which a previous predication occurred not to give one predication an argumental function within another predication. Commonly the words it and there are used to signal situational reference:

- a) Bill walked home today.
- b) It was a nice day.
- c) There was not a cloud in the sky.
- d) There were birds in the trees.

Reference by Nominalization

The final type of argumental relationship I will call reference by "nominalization." Note that for all previous types the reference was from one noun (or pronoun) to another noun argument or from one noun/pronoun argument to an entire predication. Reference by nominalization occurs when an adjective or adverb argument in one predication is stated as a noun argument in another predication.

- Sally way beautiful.
- or Beauty is a nice quality.
- Sally runs quickly.
- Quickness is a nice quality.

This type of reference can also occur in a forward direction:

- Quickness is nice.
- Sally runs quickly.

CHAPTER 6

NONARGUMENTAL RELATIONSHIPS BETWEEN
PREDICATIONS

In Chapter 5 I discussed the various types of argumental relationships that can exist between predication. We saw that argumental connections represent one strong cohesive thread running through discourse. But predication can be connected in ways that are not related to the arguments within them. To illustrate, consider the following:

Mark hit Bill because Bill isn't nice.

In these two predication there is an argumental relationship created by same word reference; Bill in the second predication refers to Bill in the first:

Mark hit Bill. ←
because
 Bill isn't nice.

Other than same word reference there is another type of relationship binding these two predication together--a relationship signaled by the word because. The second predication has a causal relationship with the first. That is, the action in the first predication was caused by the information stated in the second. Such a relationship I will call nonargumental because it is not dependent on the sharing of an argument between predication. For example, two predication can have a causal relationship without having an argumental relationship.

I went home because . . .

Bill was hurt.

This is not to say that predication that have a nonargumental relationship with one another can not also have an argumental relationship. Indeed, predication commonly have both types of relationships forming two separate but related networks binding predication together. In this chapter we will consider the various types of nonargumental relationships that can exist among predication. I have divided nonargumental relationships into five different groups: 1) relative time, 2) cause, 3) addition, 4) contrast, and 5) embedded. We will consider each separately.

RELATIVE TIME NONARGUMENTAL RELATIONSHIPS

In Chapter 3 I touched on the concepts of relative and nonrelative time when I discussed relative time arguments. Nonrelative time is expressed via an argument; for the most part relative time is expressed via a relationship marker attached to a predication. To illustrate compare the following:

- a) He went to the dance Saturday.
- b) He went to the dance before he went to the movie.

In a there is a nonrelative time argument, Saturday which places the event "he went to the dance" on some temporal plane. In b there is a relative time relationship marker, before, which connects the predication "he went to the dance" with the predication "he went to the movie". Specifically, the relationship marker before establishes a time frame for the predication, "he went to the dance", which is relative to the predication "he went to the movie." Relative time nonargumental relationships, then, always identify the time of one predication relative to the time of another predication.

There are three subtypes of relative time relationships: 1) subsequent action, 2) prior action, and 3) concurrent action.

Subsequent Action

Subsequent action relationships convey the information that one predication occurred after a previously stated predication. Most commonly the two related predications are stated in separate sentences and connected by one of the following relationship markers:

afterwards, next, since, then, later, in the end, shortly, subsequently, hitherto, so far, as yet, finally, after that, after this

eg. Bill went home.

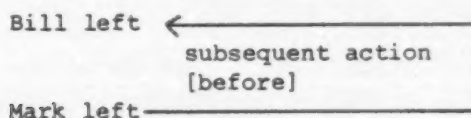
After that, Mary left.

Bill went home	←	subsequent action [after that]
Mary left	_____	

Note that I will map nonargumental relationships by drawing the reference lines to the right of the predication and stating the type of nonargumental relationship along with the relationship markers enclosed in brackets.

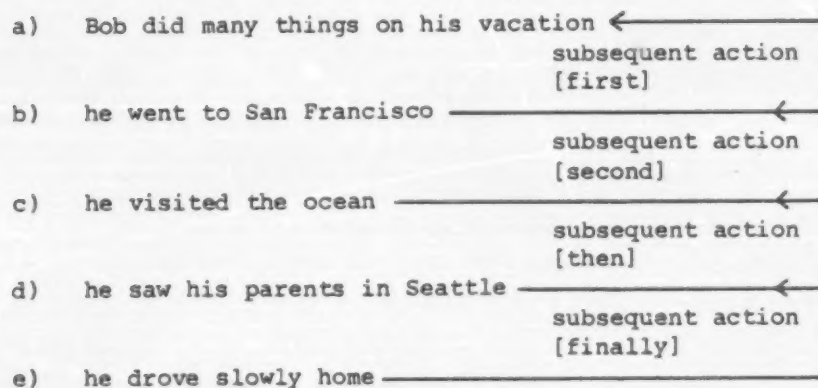
Predications with subsequent action relationships can also be expressed in a single sentence. In such cases the relationship markers before and until are commonly used.

Bill left before Mark left.



When a group of predication with subsequent action relationships are stated together the following relationship markers are commonly used to establish an "ordering" to the set: first, initially, second, secondly, third, etc, finally, lastly, then.

- eg. a) Bob did many things on his vacation.
 b) First, he went to San Francisco.
 c) Second, he visited the ocean.
 d) Then, he saw his parents in Seattle.
 e) Finally, he drove slowly home.



Subsequent action relationships may also be signaled without the use of a relationship marker. This occurs only under the following conditions:

- 1) the predication are adjacent and . . .

- 2) both predications have dynamic verbs in the past or past perfect tense, indicative moved and . . .
- 3) the actions expressed in the predications not only could not logically have occurred simultaneously but also quite likely occurred in sequence.

To illustrate this consider the following:

- a) Bill played football.
- b) He played basketball.

Here we have two adjacent predications with verbs in the past tense. However, unless we have further information we cannot say that they quite likely occurred in sequence. Consequently we would not code b as having subsequent action relationship with a. Contrast this with the following:

- a) Bill awoke. ← subsequent action
- b) He ate breakfast.

Here we have two adjacent predications with verbs in the past tense and the action expressed in b quite likely occurred after that expressed in a.

The decision as to whether adjacent predications have a subsequent action relationship commonly must be made with certain embedded verb phrases. Consider the following:

He walked, ran and skipped.

- a) He walked
- b) (he) ran
- c) (he) skipped

Here we have adjacent predications with past tense verbs but no information as to their sequence in time. But consider the following:

He walked, ran and then skipped.

- a) He walked ← subsequent action
- b) (he) ran ← subsequent action [then]
- c) (he) skipped

Here the inclusion of the relationship marker, then, between the second and third predications is enough evidence to indicate that the speaker or writer's intent was that the three actions, walked, ran, and skipped, occurred in sequence.

Finally, subsequent action relationships can be signaled by an entire predication acting as a relationship marker.

Bill left. This was done before Mary left.

- a) Bill left
- b) This was done ← subsequent action
[before]
- c) Mary left

Note the construction here. This in b establishes whole predication argumental reference with a; thus, b is a filler predication for a. The relationship marker before establishes the subsequent action nonargumental relationship of c to b. In effect then c has a subsequent action relationship with a. This use of a filler predication is quite common with nonargumental relationships. Rather than map the relationship as has been done above I will frequently use the convention of calling the entire filler predication a relationship marker and coding it in the following way.

- a) Bill left ← subsequent action
[this was done before]
- b) Mary left

Prior Action

Predications with prior action relationships are commonly stated in separate sentences with the later introduced by one of the following relationship markers.

earlier, initially, in the beginning, originally, at first, previously, beforehand, formerly, before that, before now, until then, up to now, by now, by then

Bill went home. Earlier Mark had gone.

- a) Bill went home ← prior action
[earlier]
- b) Mark had left

When a prior action predication is embedded in another predication the relationship marker after is commonly used.

Bill left after Mark left.

- a) Bill left ← prior action
[after]
- b) Mark left _____

Prior action predications may also take the form of an embedded past participial.

The defeated team sat in the locker room.

- a) The team sat in the locker room ← prior action
- b) (team was) defeated _____

Note that there is an understood operator, was, in predication b. An entire predication can also be used as a relationship marker.

Bill left. This was done after Mark left.

- a) Bill left ← prior action
[this was done after]
- b) Mark left _____

Concurrent Action

Concurrent action relationships indicate that the action expressed in one predication occurred simultaneously with the action expressed by another predication.

They crossed the river with Bill paddling furiously.

- a) They crossed the river ← concurrent action
[with]
- b) Bill paddling furiously _____

When predications with concurrent action relationships are expressed in separate sentences they are commonly introduced by one of the following relationship markers:

simultaneously, concurrently, contemporaneously, in the interim, meanwhile, meantime, at this point, at the same time.

Concurrent action predications are also commonly stated as embedded subordinate clauses and introduced by one of the following: when, while, whenever, as, and then.

He came while Mark was watching T.V..

- a) He came (time) ← concurrent action
 b) while Mark was watching T.V. ← concurrent action

He left when I left.

- a) He left (time) ← concurrent action
 b) when I left ← concurrent action

Note that while and when above signal wh-word argumental relationships along with concurrent action nonargumental relationships. This was explained in Chapter 5.

It should be noted here that when and then do not always signal concurrent action relationships. Specifically when the clause introduced by when is in complement position to a transitive verb the relationship signaled by when is strictly argumental (wh-word).

I know when he will arrive.

- a) I know (time)
 b) when he will arrive.

Then signals a concurrent action relationship only in certain situations. To illustrate, consider the following:

Last summer Mark lived in Seattle.
 He was happy then.

- Last summer Mark lived in Seattle. (time) ← concurrent action
 He was happy then. ← concurrent action

Here then signals a wh-word argumental relationship and a concurrent action nonargumental relationship. Then signals a

concurrent action relationship only when it also signals a wh-word argumental relationship. More commonly then signals a subsequent action relationship. In such cases it does not signal a wh-word argumental relationship.

He left. Then Bill left.

He left ←
subsequent action
[then]
 Bill left

I should also note here another important situation involving the use of then.

Last summer Mark lived in Seattle.
 It was then that he was happy.

Last summer Mark lived in Seattle ←
concurrent action
[it was then that]
 he was happy.

Again note that I have coded the entire predication "it was then that" as a relationship marker.

Concurrent action predications are also expressed as embedded present participles.

I saw the boy running down the street

a) I saw the boy ←
concurrent action
 b) (boy) running down the street

Present participles usually signal a concurrent action relationship; gerunds do not.

Bill likes running.

a) Bill likes _____
 b) (Bill) running

Here the action in b does not occur simultaneously with that expressed in a.

Again filler predications can be used as relationship makers.

Mark left. This was done while Bill was leaving.

- a) Mark left ← concurrent action
[this was done while]
- b) Bill was leaving _____

Finally concurrent action relationships may also take the form of an embedded verb phase that has the same verb tense as the verb in the predication in which it is embedded:

- Bill was walking and singing. ← concurrent action
[and]
- (Bill) singing _____

Note that walking and singing are both past tense progressive mood. Concurrent action in this format can be considered the complement to subsequent action relationships signaled by an embedded predication that could not logically have occurred simultaneously. The condition for concurrent action predications with the structure above is that the predications "quite logically occurred simultaneously". Above it is logical that walking and singing occurred concurrently. However, consider the following.

Bill was running and skipping.

- a) Bill was running
- b) (Bill) skipping

Here running and skipping could not logically have occurred simultaneously. Hence they can not be coded as having a concurrent action relationship.

Wh-word Argumental Relationships and Nonargumental Relative Time Relationships

Before concluding the discussion of relative time relationships it is important to highlight the overlap between certain wh-word argumental relationships and nonargumental relative time relationships. Specifically when, whenever, while, and then when signaling wh-word argumental relationships also signal concurrent action, relative time, nonargumental

relationships. It should be noted that in such cases they are also coded as relative time arguments within their own predications. In general the only problems in coding occur with then, when and while. While always signals an argumental wh-word relationship; consequently it always signals a concurrent action, relative time nonargumental relationship. In general when always signals a wh-word argumental relationship except in the case where the clause it introduces is in complement position to a transitive verb. Then signals a wh-word argumental relationship only in certain, rare situations. It is more commonly used as a relationship marker for subsequent action relationships.

CAUSAL NONARGUMENTAL RELATIONSHIPS

Causal nonargumental relationships are actually a subset of relative time nonargumental relationships. That is, without the concept of time there is no causation because causation implies that one event or condition always precedes some other event or condition in time. There are five subtypes of causal relationships: 1) direct cause, 2) reason, 3) result, 4) inference, and 5) condition. We will consider each separately.

Direct Cause

Predications that have a direct cause nonargumental relationship with another predication are usually embedded verb phrases introduced by the relationship markers by, from, or by/from/the fact that.

He won the contest by swallowing ten goldfish.

- a) He won the contest ← direct cause
[by]
- b) (he) swallowing ten goldfish. _____

Again a filler predication can be used as a relationship marker for direct cause.

He won the contest. This was done by swallowing ten goldfish.

- a) He won the contest. ← direct cause
[this was done by...]
- b) (he) swallowing ten goldfish. _____

Again recall that a more accurate mapping of the role of the filler predication would be...

- a) He won the contest
 b) This was done ← direct cause
[by]
 c) (he) swallowing ten goldfish —

Here predication b is a filler predication which carries the relationship marker by and acts as a surrogate for predication a via the whole predication reference created by this in b.

Reason

A predication that has a reason nonargumental relationship within another predication commonly takes the form of an embedded infinitive phrase:

He threw water on Bill to wake him up.

Here, predication b is the reason for predication a.

He threw the water on Bill ← reason
 (he) to wake him up —

This is the most common form for reason predications; an embedded infinitive with a deleted subject argumental relationship with the predication it is embedded in. Embedded reason predications can also be expressed as dependent clauses. In such cases they are commonly introduced by one of the following relationship markers:

because
 in that
 so that
 since
 so
 because of
 on account of
 for the fact that
 for

He went home because the baby was sick.

He went home ←
 reason
 [because]
 the baby was sick.

Embedded reason predications also commonly take the form of a gerund with a subject noun in the genitive case:

He was elected because of Bill's expert running of the campaign.

- a) He was elected ←
 reason
 [because of]
 b) Bill's expert running of the campaign

With such constructions because of and on account of are common relationship markers although their use in this situation is considered nonstandard by some.

Reason predications can also be stated in separate sentences but in such cases they require the use of a filler predication acting as a relationship marker:

- a) Mike threw water on Bill
 b) this was done ← reason
 c) (Mike) to wake Bill up

or

- a) Mike threw water on Bill ←
 reason
 [this was done]
 b) (Mike) to wake Bill up

Result

A predication that has a result relationship with a previous predication is usually stated in a separate sentence:

- a) The hostages were released.
 b) Consequently, the world rejoiced.

Here predication b is the result of predication a.

- a) The hostages were released ←
- b) the world rejoiced _____
- result
[consequently]

(Note that there is no argumental relationship between predication a and b.) Predication b is the result of the action expressed in a. Result and reason relationships are the inverse of one another in a causal sense. Assume event A causes event B. Event A, then, is the reason for event B; event B is the result of event A. When analyzing predications for reason and result nonargumental relationships, I will assume a backward direction of reference. That is, I will analyze the reason or result relationship a predication has with previous predications only--not with predications that come after it. Consequently, in the examples above we would not code predication a as the reason for predication b.

When stated in separate sentences result predications are usually introduced by one of the following relationship markers:

consequently
hence
now
so
therefore
thus
as a consequence
for all that
as a result
whereupon
therefore
accordingly
hence
the result was (is) that
this is the reason why

Note that the last three relationship markers are themselves predications. Again, their syntactic function is that of a filler; their semantic function is to signal the relationship between two predications:

The hostages were released. The result was that the world rejoiced.

- a) The hostages were released. ←
- b) the result was _____
- c) the world rejoiced. _____
- result

Result predications can also be embedded in another predication. When this is the case they are commonly introduced by an intervening predication acting as a relationship marker. Commonly, relationship marker predications such as the following are used:

resulting in the fact that
resulting in
which caused

The hostages were released which caused the world to rejoice.

- a) the hostages were released ← _____
b) which caused _____ ← result
c) the world to rejoice _____

Result predications can also be embedded in another predication without an intervening predication acting as a relationship marker:

He was too tired to go any farther.

- a) He was too tired ← _____ result
- b) (he) to go any farther _____

He played so hard that he almost hurt himself.

- a) He played so hard ← _____
result
[that]
- b) (he) almost hurt himself _____

This type of embedding occurs only when the predication that receives the embedding contains a state or manner argument that is modified by an intensifier (eq., too tired; so hard).

Inference

Closely related to result relationships are inference relationships:

Mary is leaving for the summer. In that case, she should prepare well.

- a) Mary is leaving for the summer ← inference
[in that case]
- b) she should prepare well _____

Here, the meaning is that predication b is an implied result of predication a. Most of the time, inference predications are stated in separate sentences and are introduced by one of the following relationship markers:

else
otherwise
in that case
then

When they are embedded, inference predications usually take the form of a clause introduced by a predication acting as a relationship marker:

Sally has a test Monday which means that she should study hard.

- a) Sally has a test Monday ← inference
[that]
- b) which means _____
- c) she should study hard _____

or

- a) Sally has a test Monday ← inference
[which means that]
- b) she should study hard _____

Condition

As the name implies a condition relationship carries the message that the action expressed in one predication is a condition for the action in another:

We can leave now that Bill has arrived.

- a) We can leave ← inference
[now that]
- b) Bill has arrived _____

Unlike the coding procedures for reason or result relationships I will allow a forward coding with condition predications:

Now that Bill has arrived we can leave.

- a) Bill has arrived ←

condition [now that]

- b) we can leave _____

Most commonly, condition predications are embedded and are introduced by one of the following relationship markers:

now that supposing that granted that assuming that seeing that as long as in so far as where no sooner...than even if	providing that considering that admitting that presuming that unless...then in as much as if when...then... if only
--	--

Note that many of these relationship markers are predications that necessarily have generic subjects:

We will leave at eleven providing that Bill arrives on time.

- a) We will leave at eleven ←

condition [providing that]

- b) Bill arrives on time _____

or

- a) We will leave at eleven ←

condition [that]

- b) (G) providing ←

condition [that]

- c) Bill arrives on time _____

ADDITIVE NONARGUMENTAL RELATIONSHIPS

Additive relationships signal that in some way one predication is similar to another predication. There are four types of additive relationships: 1) equality, 2) example, 3) restatement, and 4) summation. We will consider each.

Equality

When two predications have an equality relationship the intended message is that the predications are identical or considered very similar. Frequently equality predications are expressed as separate sentences and introduced by one of the following relationship markers.

also, moreover, equally, too, besides, further, furthermore, what is more, likewise, similarly, as well, in addition, besides, at the same time.

Bill was tired. He was also hungry.

- a) Bill was tired ← equality
[also]
- b) He was hungry. _____

Note that when also and too are used as relationship markers the verb is commonly expressed as some form of do.

Bill likes girls; Mark does too.

- a) Bill likes girls ← equality
[too]
- b) Mark does _____

Equality predications can also take the form of a main clause attached to another main clause via the relationship marker and.

He plays basketball, and he runs track.

- a) He plays basketball ← equality
[and]
- b) he runs track _____

They may also be embedded in the form of verb phrases attached to a main verb and introduced by the relationship marker and or as well as.

He runs and plays.

- a) He runs ←

equality
[and]
- b) (he) plays _____

When a string of embedded verb phrases occur, I will consider all of them as equality predications.

He walked, ran and skipped.

- a) He walked ←

equality

- b) (he) ran ←

equality
[and]
- c) (he) skipped _____

It is important to note the overlap between equality nonargumental relationships expressed in this form and subsequent or concurrent action relationships expressed in this same form. That is predications with equality relationships expressed as embedded verb phrases frequently also have subsequent action or concurrent action relationships.

He was laughing and singing.

- a) He was laughing ←

equality
concurrent action
[and]
- b) (he) singing _____

I should also emphasize here a point made in Chapter 4--namely, that there is a difference between additive equality predications and compounded arguments that have been added to a predication. Again, a predication must have an explicitly stated verb. Arguments without verbs that have been added to predications are not considered additive predications--simply compounded arguments. Thus, there is only one predication in the following example:

She likes Bill, Mark, Sam, and Fred.

Example predications may also be stated in separate sentences and introduced by a predication functioning as a relationship marker.

He does many wonderful things. To illustrate, he visits the sick.

- a) He does many wonderful things. ←
- b) (G) to illustrate example
- c) he visits the sick. _____

. . . or . . .

- a) He does many wonderful things ←
- b) he visits the sick _____
- example
[to illustrate]

When a number of examples are given they may be ordered and introduced by one of the following relationship markers;

first, firstly
second, secondly
third, thirdly
one, two, three
for a start
to begin with
next
then
finally
last but not least
most importantly
for one thing
for another thing
another example would be
another instance

(Note that the last two relationship markers are themselves predications.)

There are many reasons for Bills sucess. First, he is intelligent. Second, he has a good staff. Finally he is good with people.

- | | | |
|----|--|-----------|
| a) | There are many reasons for Bill's success. | example |
| b) | he is intelligent | [first] |
| c) | he has a good staff | [second] |
| d) | he is good with people | [finally] |

Restatement

When a predication has a restative relationship with another predication it simply "states again" the information presented in the predication. Restatement predications commonly occur in separate sentences and are introduced by one of the following relationship markers:

even
indeed
actually
in fact
namely
that is
that is to say
another way of saying it is

Again, note that the last two relationship markers are predications:

Bill is my friend. That is, I am close to him.

- a) Bill is my friend
- b) that is _____ restatement
- c) I am close to him

... or ...

- a) Bill is my friend ← restatement
[that is]
- b) I am close to him _____

Bill was not afraid. Indeed, he was courageous.

- a) Bill was not afraid. ← restatement
[indeed]
- b) he was courageous _____

Summation

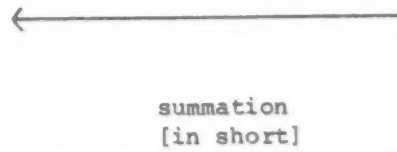
The final type of additive relationship that can exist between predications is that of summation. A summative predication makes a generalization about the information presented in a preceding set of predications. They always appear in separate sentences and are commonly introduced by one of the following relationship markers:

altogether
overall
then
thus
in all
therefore
all in all
in conclusion
in sum
in a word
in brief
briefly
in short
to be brief
to conclude
to summarize
to sum up

Again, the last four relationship markers are themselves predications. When mapping a summation relationship I will use a special convention. To illustrate, consider the following:

Mary is tall. She is intelligent and she is charming. In short, she is almost perfect.

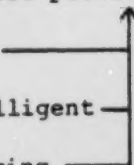
- a) Mary is tall
- b) She is intelligent
- c) She is charming
- d) She is almost perfect



I will enclose all the predications that the summation predication refers to in a set parenthesis and draw the reference line to that set. It is important to note here that analysis will always proceed in a backward direction. In other words, a summative statement can not come before a set of predications. The following, then, contains no summative statement:

Mary is almost perfect. She is tall. She is intelligent.
She is charming.

Instead, I will code this as three predications that have an example relationship with the first statement:

- a) Mary is almost perfect.
 - b) She is tall
 - c) She is intelligent
 - d) She is charming
- 
- example

This is a different pattern from that of summation. Here, a generalization has been made and is supported by three examples. The coding illustrates this.

CONTRASTIVE NONARGUMENTAL RELATIONSHIPS

Contrastive nonargumental relationships are the negative counterpart of additive relationships. Where additive relationships indicate similarity between predications, contrastive relationships indicate dissimilarity. There are four types of contrastive relationships: 1) antitheses, 2) comparison, 3) alternative, and 4) concession. We will consider each separately.

Antithesis

Predications that have an antithesis relationship convey the message that "this information is directly opposite in meaning from the previous information:"

He was short but he could leap well.

Here, the relationship marker but indicates that the two predications have an antithesis relationship. When such predications are stated in separate sentences they are commonly introduced by one of the following relationship markers:

alternatively
or rather
worse still
what is better
what is worse

I would rather say
 contrariwise
 contrastingly
 conversely
 oppositely
 on the contrary
 else
 otherwise
 on the other hand
 on the contrary
 by way of contrast

Mark is very tall. By way of contrast, his sister is short.

- a) Mark is very tall. ← antithesis
[by way of contrast]
- b) his sister is short _____

When predications with an antithesis relationship are stated as main clauses in the same sentence, but or yet are commonly used as relationship markers:

He told Mary one story, but he told Paul another.

- a) He told Mary one story ← antithesis
[but]
- b) he told Paul another _____

As in the case with additive relationships predications with antithesis relationships can be embedded as verb phrases:

He told Mary one story but told Paul another.

- a) He told Mary one story ← antithesis
[but]
- b) (he) told Paul another _____

Commonly, with embedded verb phrases the relationship marker not is used:

He was laughing not crying.

- a) He was laughing ← antithesis
[not]
- b) (he) crying _____

Comparison

Predications with comparison nonargumental relationships are commonly stated in separate sentences and introduced by one of the following relationship markers:

in comparison
by way of comparison
by comparison

Bill is tall. By comparison, his sister is short.

- a) Bill is tall ← comparison
[by comparison]
- b) his sister is short comparison
[by comparison]

Basically the message conveyed by a comparison relationship is the same as that conveyed by an antithesis relationship except that the magnitude of the difference is not considered as great in the case of comparison.

Comparison may also be expressed by the negative particle not plus like plus a main clause.

He can not run like Bill runs.

- a) He can run ← comparison
[not like]
- b) Bill runs comparison
[not like]

Alternative

When predications have an alternative relationship with one another they are stated as equal possibilities, both of which can not exist at once or neither of which can exist:

Either we will come or he will go.

- a) We will come ← alternative
[either...or]
- b) he will go alternative
[either...or]

He will neither win nor lose.

- a) He will win ←
 b) he lose ————
- alternative
[neither...nor]

Commonly, one of the following relationship markers is used to introduce predications with an alternative relationship:

either...or
 neither...nor
 rather than
 sooner than

Concession

Concession relationships carry the meaning "what was previously stated is not a condition for or a factor influencing the next predication." Commonly, predications with concession relationships occur in separate sentences and are introduced by one of the following relationship markers:

however
 anyhow
 besides
 else
 nevertheless
 nonetheless
 not withstanding
 only
 still
 though
 in any case
 in any event
 for all that
 in spite of that
 all the same
 anyway
 although
 at any rate
 in any case
 regardless of this
 except for
 except for the fact that

Bill was cut from the team. However, his spirits remain high.

- a) Bill was cut from the team ← concession
[however]
- b) his spirits remain high _____

When embedded verb phrases have a concession relation with the predication in which they are embedded they are introduced by the relationship marker without.

He came without calling.

- a) He came ← concession
[without]
- b) (he) calling _____

EMBEDDED NONARGUMENTAL RELATIONSHIPS

Quite frequently an entire predication is used as an argument within another predication. Consider the following:

That Sally was not at the dance bothered Bill.

Here there are two predications:

- a) Sally was not at the dance.
- b) _____ bothered Bill [that]

Predication b has no single argument which performs the role of subject. Instead predication a serves this function. There are six argument types which can be filled by an embedded predication: 1) stimulus, 2) affected, 3) subject matter, 4) object, 5) described and, 6) quality. We will consider each.

Embedded Stimulus Predications

As was described in Chapter 3 stimulus arguments are commonly introduced by one of the following argument markers:

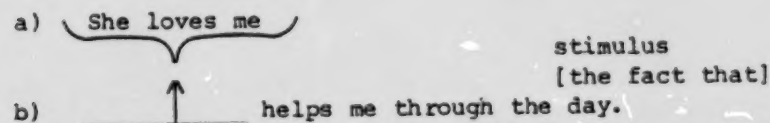
because of
on account of
for
from
for _____ of

When these are used to introduce embedded predications the predication is coded as having a reason nonargumental relationship. (See section on "Causals" in this chapter.) Embedded stimulus predications are restricted to those with the following characteristics:

- 1) The embedded predication is in subject position.
- 2) The embedded predication is not introduced by a relationship marker.
- 3) The matrix predication (that which holds the embedded predication) has a verb that requires an argument with same causal involvement in the action expressed by the verb.

In effect the identification of a stimulus category for nonargumental relationships expands the causal category of nonargumental relationships discussed previously in this chapter. That is, we could say that there are six types of causal nonargumental relationships: direct cause, reason, result, inference, condition and embedded stimulus. For language analysis purposes however, I will not include embedded stimulus in the general causal category. Below I have mapped some embedded stimulus predications.

The fact that she loves me helps me through the day.



Note that when mapping nonargumental relationships I will leave the argument slot empty in the matrix predication and draw the reference arrow from the empty argument slot to the predication, indicating that syntax is a signal to the argumental relationship.

Embedded Affected Predications

Affected arguments are always in subject position; are never introduced by a relationship marker and occur only with verbs that do not require the subject to be causally involved in the action expressed by the verb. Such verbs are commonly called process verbs (eg. continue)

Embedded affected predications can take many syntactic forms:

Loving continues in the midst of war.

- a) (G) loving _____ affected
 b) _____ ↑ continues in the midst of war.

The fact that men fall in love continues in the midst of war.

- a) men fall in love _____ affected
 [the fact that]
 b) _____ ↑ continues in the midst of war.

Bill's fearing of heights continues.

- a) Bills fearing of heights _____ affected
 b) _____ ↑ continues

Embedded Subject Matter Predications

As was stated in Chapter 3, subject matter arguments are generally in post verb position and are always introduced by one of the following relationship markers: about, on, for, at, of, with. When embedded predications are used as subject matter arguments they follow this same format:

They talked about the fact that Bill left.

- a) They talked about _____ ← subject matter
 [the fact that]
 b) Bill left _____

Note that "about" is the argument marker signaling the argumental function; "the fact that" signals that the predication has a nonargumental relationship. Embedded subject matter arguments are quite frequently expressed as gerunds but never as infinitives:

They talked about living.

- a) They talked about _____ ← subject matter
 b) (G) living _____

They talked about to live. *

Embedded subject matter arguments may also have the following format:

I was sure he was here.

Semantically this is equivalent to.

I was sure of the fact that he was here.

Above of signals the argumental function and the fact that signals the nonargumental function of the embedded predication.

Embedded Object Predications

Recall from Chapter 3 that the argumental type, object, was basically a residual category to describe arguments in postverb position to dynamic, active voice verbs which could not be classified as recipient, direction or subject matter arguments and to describe unclassified arguments in subject matter position to passive voice dynamic verbs. With embedded predications the object category will be used to describe:

- 1) embedded predications in complement position to dynamic, active voice verbs which can not be classified as subject matter arguments,
- 2) embedded predications in subject position with passive voice dynamic verbs.

There are only four types of embedded predications that may occur with dynamic predications: stimulus, affected, subject matter and object. Of those only stimulus and affected predications are usually found in subject positions with active voice verbs. Only subject matter and object predications can be in complement position with active voice dynamic verbs and only object predications can be in subject position with passive voice dynamic verbs. Add to this the fact that only subject matter embedded predications can be introduced by a relationship marker and we have a fairly straight forward process for identifying embedded predications within a matrix predication that has a dynamic verb. If an embedded predication is introduced by a relationship marker it is automatically classified as a subject matter predication. If it is in subject position to a dynamic, active voice verb it is either a stimulus or affected predication depending on whether

or not the verb requires a subject that has some causal influence on the action expressed by the verb. If the predication can not be classified as subject matter, stimulus, or affected and is in complement position then it is classified as an object predication. Below I have mapped some object predications:

I like the fact that Bill is here.

- a) I like _____  object
[the fact that]
- b) Bill is here _____ 

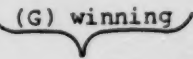
I know Bill is nice.

- a) I know _____  object
- b) Bill is nice. _____ 

Embedded Described and Class Predications

Predications embedded in matrix predicators with stative verbs are classified as either described or class predications. If the embedded predication is in subject position to an active voice, stative verb it is classified as a described predication:

Winning is nice.

- a) (G) winning 
- b) _____ is nice. 

If the embedded predication is in complement position to an active voice verb, it is classified as a class predication.

Love is never hurting anyone.

- a) Love is _____ 
- b) (G) never hurting anyone _____ 

ARGUMENTAL RELATIONSHIPS BETWEEN PREDICATIONS VS. EMBEDDED PREDICATIONS WITH ARGUMENTAL RELATIONSHIPS

It is important to clarify here the difference between argumental relationships between predications and embedded

It is important to clarify here the difference between argumental relationships between predications and embedded predications that serve an argumental function. To illustrate this distinction consider the following:

He left to stop crying.

Here the two predications have an argumental connection:

- a) He left
 b) (he) to stop crying
- 

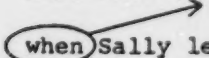
Here the predications are again connected argumentally by the deleted subject he; however, predication b also serves the function of object in predication a; without predication b, predication a would make no sense. The basic test for whether a predication serves an argumental function within another predication is whether that other predication makes sense without it. For example, if we deleted predication b above, predication a would make no sense (He wanted...). However, in the prior example (He left to stop crying), the matrix predication he left does make sense without the embedded predication, (he) to stop crying.

Special care must be taken when coding predications that have a wh-word relationship with a previous predication.

eg. Bill knew when Sally left.

At first glance it might appear that the predication when Sally left acts as the object of the predication Bill knew. But recall that these two have a wh-word relationship.

Bill knew (time)
 when Sally left



The object of the predication Bill knew is actually an understood time argument; Bill knew the time Sally left not the fact that she left. Semantically this is quite different from meaning expressed by an embedded predication with an argumental function. Consider the set of predications He wanted to stop crying. Here the entire action (he) to stop crying is the object of the action He wanted. A simple rule of thumb to follow is that a predication which has a wh-word relationship with another predication can never concurrently have an argumental function within that predication.

I should highlight the fact here that the wh-word that can signal a wh-word argumental relationship and an embedded nonargumental relationship but not both simultaneously. It is the only word that can function in this manner. When it introduces a predication with a nonargumental relationship it will be classified as a relationship marker. When it signals an argumental relationship it will be classified as a wh-word signaling wh-word reference.

I should also note here the semantic similarity between embedded nonargumental relationships and whole predication argumental reference. Consider the following:

a) Whole Predication Argumental Reference

Bill hit Mark
This bothered Mary.

b) Embedded Predication, with Argumental Function.

That Bill hit Mark
 _____ bothered Mary.

As these examples illustrate many types of embedded argumental relationships are semantically identical to some argumental whole predication relationships. Indeed, in some discourse grammars these two types of relationships are classified under the same general heading. My reason for separating the two is based on form rather than function. As was stated previously, whole predication reference is signaled by a word (this, that, which) which has an argumental function within its own predication. With embedded relationships one predication is logically and syntactically incomplete without the other.

Another way of saying this is that with whole predication reference both predications are logically complete without the other. With an embedded predication functioning as an argument this is not the case. One predication is logically incomplete without the other. My decision to separate the two types of relationships, then, is based on syntactic grounds.

PART II

CHAPTER 7

MEASURING ARGUMENTAL CHARACTERISTICS

In this chapter we will consider a number of indices with which to quantify various argumental characteristics. I will present measures that cover three different argumental characteristics: 1) argumental type, 2) argumental depth and, 3) argument sophistication. For illustrative purposes we will be analyzing the essay below:

Jim Thorpe was a great man and he loved sports. He lived sports all his life. When he was little he lived on an Indian reservation. He went to college when he got older. He went out for football, baseball, and track. He was outstanding in everything he tried. When he was on vacation from school one time he played for a small farm team and got paid for it. That next year he went to the Olympics. He won the gold medal in the decathlon. The Olympic committee found out that he had played baseball for money and they took away his trophies and medals. His life started going down after that. Then he became a coach.

DEVELOPING A PREDICATION BASE

The first step in performing any type of quantitative analysis is to divide the language sample into predications. I have done this below for the sample essay.

- 1) Jim Thorpe was a great man
and
- 2) he loved sports.
- 3) He lived sports all his life.
- 4) When he was little
- 5) he lived on an Indian reservation.
- 6) He went to college
- 7) when he got older.
- 8) He went out for football, baseball, and track.

- 9) He was outstanding in everything
- 10) he tried.
- 11) When he was on vacation from school one time
- 12) he played for a small farm team
and
- 13) got paid for it.
That next year
- 14) he went to the Olympics.
- 15) He won the gold medal in the decathlon.
- 16) The Olympic committee found out _____
that
- 17) he had played baseball for money
and
- 18) they took away his trophies and medals.
After that
- 19) his life started going down.
Then
- 20) he became a coach.

The operating principle to use when identifying predication is that every verb form or part of a verb form (with understood deletions) is considered a separate predication.

Note that I have separated the relationship markers signaling nonargumental relationships from the predication. They are written between predications. In Chapter 10 I will discuss the specific types of nonargumental relationships these markers signal. Here they are separated so that we might more easily identify the arguments within predications.

Once the predication in a language sample have been identified it is a fairly simple task to identify individual arguments and predicates within predications. Below I have done this for the twenty sample predications. Arguments are coded a; predicates are coded p;

- | | | | | |
|----|------------|-----|--------|-----|
| 1) | Jim Thorpe | (a) | loved | (p) |
| | was | (p) | sports | (a) |
| | great | (a) | | |
| | man | (a) | | |
| 2) | he | (a) | | |
| | | | 3) he | (a) |
| | | | lived | (p) |
| | | | sports | (a) |

	all	(a)	12)	he	(a)
	his	(a)		played	(p)
	life	(a)		for team	(a)
				small	(a)
4)	when	(a)		farm	(a)
	he	(a)			
	was	(p)	13)	got paid	(p)
	little	(a)		for it	(a)
5)	he	(a)	14)	he	(a)
	lived	(p)		went	(p)
	on reservation	(a)		to Olympics	(a)
	Indian	(a)			
6)	He	(a)	15)	he	(a)
	went	(p)		won	(p)
	to college	(a)		gold	(a)
				medal	(a)
				in decathlon	(a)
7)	when	(a)	16)	Olympic	(a)
	he	(a)		committee	(a)
	got	(p)		found out	(p)
	older	(a)			
8)	he	(a)	17)	he	(a)
	went out	(p)		had played	(p)
	for football	(a)		baseball	(a)
	baseball	(a)		for money	(a)
	and track	(a)			
9)	he	(a)	18)	they	(a)
	was	(a)		took	(p)
	outstanding	(a)		away	(a)
	in everything	(a)		his	(a)
				trophies	(a)
				and medals	(a)
10)	he	(a)	19)	His	(a)
	tried	(p)		life	(a)
11)	when	(a)		started going	(p)
	he	(a)		down	(a)
	was	(p)			
	on vacation	(a)	20)	he	(a)
	from school	(a)		became	(p)
	one	(a)		coach	(a)
	time	(a)			

There are a few conventions I have used which should be explained here:

- a) argument markers are included with the arguments they introduce (eg. "on reservations" predication #5).
- b) The articles a, an and the are excluded from the analyses.
- c) Proper nouns are considered one argument (eg. "Jim Thorpe").
- d) The ending preposition on a two part verb is considered part of the verb (eg. "found out" in predication #16).
- e) Auxiliaries and semi-auxiliaries are considered part of the predicate.
- f) Markers for compound arguments are included with the arguments they introduce (eg. "and track" in predication #8).

ARGUMENTAL TYPE

One of the most straight forward ways of analyzing argumental characteristics is to quantify the diversity in the use of argumental types. Below I have coded each argument by type:

Argument	Type	Argument	Type
-1- Jim Thorpe was great man	described predicate quality class	baseball and track	subj mat subj mat
-2- He loved sports	agent predicate object	-9- He was outstanding in evthing	described predicate quality situation
-3- he lived sports all his life	agent predicate object specifier owner nonrel time	-10- he tried	agent predicate
-4- when he was little	rel time described predicate quality	-11- when he was onvacation from schl. one time	rel time described predicate situation situation specifier nonrel time
-5- he lived on reserva Indian	agent predicate location class	-12- he played for team small farm	agent predicate stimulus quality class
-6- He went to college	agent predicate direction	-13- got paid for it	predicate stimulus
-7- when he got older	rel time described predicate quality	-14- he went to Olympic	agent predicate direction
-8- He went out for football	agent predicate subj mat	-15- He won gold medal in decathlon	agent predicate class object situation

Argument	Type	Argument	Type
-16- Olympic Committee found out	class agent predicate	his trophies and medals	owner object object
-17- he had played baseball for money	agent predicate object stimulus	-19- His life started going down	owner affected predicate direction
-18- they took away	agent predicate direction	-20- he became coach	described predicate class

Before considering the specific decisions made for the arguments above let us consider some general decision rules for argumental type. Recall, from chapters 2 and 3 that there are twenty-six different argument types:

agent
instrument
stimulus
described
affected
recipient
subject matter
situation
direction
object
state
quality
class
standard/comparison
owner/possessor
nonrelative time
relative time
location
existence
attitude
duration
exclamation
intensifier/diminisher
manner
specification
accompaniment

Many of these argument types have fairly salient features and can be easily identified if one is well acquainted with those features. The differences between other argument types is less obvious and requires the use of "decision rules" to insure consistency of classification. I will consider first those argument types with the more salient features.

The following argument types are fairly easily identified:

- recipient
- standard/comparison
- owner/possessor
- nonrelative time
- relative time
- duration
- location
- direction
- existence
- attitude
- exclamation
- specification
- manner
- intensification
- accompaniment

Although discussed in chapters 2 and 3, I will briefly review the characteristics of each:

a) recipient

- o receiver of something via the action of the predicate and some other argument.
- o includes any word that would be classified as the direct object in traditional grammar.
- o frequently is introduced by the argument marker to.
- o can be in subject position when the verb is passive.
eg. Bill was given the ball by Mark.

b) standard/comparison:

- o establishes a frame of reference for a manner or quality argument.
- o is always introduced by an argument marker:

- 1) more + quality + than + standard/comparison
or
manner
argument
eg. He was more tired than Bill.

- 2) for + standard/comparison argument
eg. he is a good basketball player for a
short person.

c) owner/possessor:

- o shows possession or ownership.
occasionally is introduced by the relationship
maker of.
eg. This is a possession of Bill's.
- o possessive pronouns always indicate an owner/
possessor argument.

d) nonrelative time:

- o identifies the time in which a predication
occurs but does not contrast that time with the
time of a previously stated predication.
- o a closed class of adverbial forms are always
nonrelative time arguments (eg. now).
- o a closed class of nouns are always nonrelative
time arguments (eg. Saturday). These nouns can
occur with or without argument markers.

e) relative time:

- o limited to a set of wh-words which include when,
while, then, and whenever. They signal a
relative time relationship (concurrent action)
with some previously stated predication.

f) duration:

- o identifies the duration in time of the action of
a predication.
- o closed class of adjectives and adverbs always
signal duration arguments.
- o the word times is a duration argument when
preceded by a specifier argument naming
quantity (eg. "four times").
- o nouns which identify events or specific times
(eg. "Saturday the game") are duration arguments.

when introduced by one of the following argument markers: during, for, until, in, through, throughout, from _____ to _____, per, all long;

g) location:

- o identifies the location in which the action expressed by a predication occurred or the location of a specific nominal argument within a predication.
- o a closed set of adverbials are commonly location arguments (eg. "here, there").
- o nouns which name specific places or objects are location arguments when introduced by one of the following argument markers: at, from, in, out, on, underneath, by, above, over, on top of, beneath, between, insider, near, opposite, under;

h) direction:

- o identifies the direction of the action expressed by the predication.
- o closed set of adverbs are commonly direction arguments (eg. here, there).
- o nouns which name specific places or objects can be direction arguments when introduced by appropriate argument makers (eg. "at, from").

i) existence:

- o limited to use of the word there in subject position.

j) attitude:

- o expresses attitude of the speaker about the information presented in the predication.
- o closed set of adverbs are always attitudinal arguments (eg. "luckily, actually").

k) exclamation:

- o purely emotive statements that accompany a predication.
- o interjections are always exclamation arguments.

1) specification:

- o identifies amount or quantity of a nominal argument.
- o closed set of determiners, predeterminers, demonstratives, cardinal/ordinal numbers, etc. are always specification arguments.

m) manner:

- o identifies manner in which the action expressed by the predication occurs.
- o most commonly ly adverbs are manner arguments.
- o nouns can be manner arguments when introduced by argument markers "with or without".
- o adjectives can be manner arguments when embedded in the argument frame: in "a _____ way or manner".

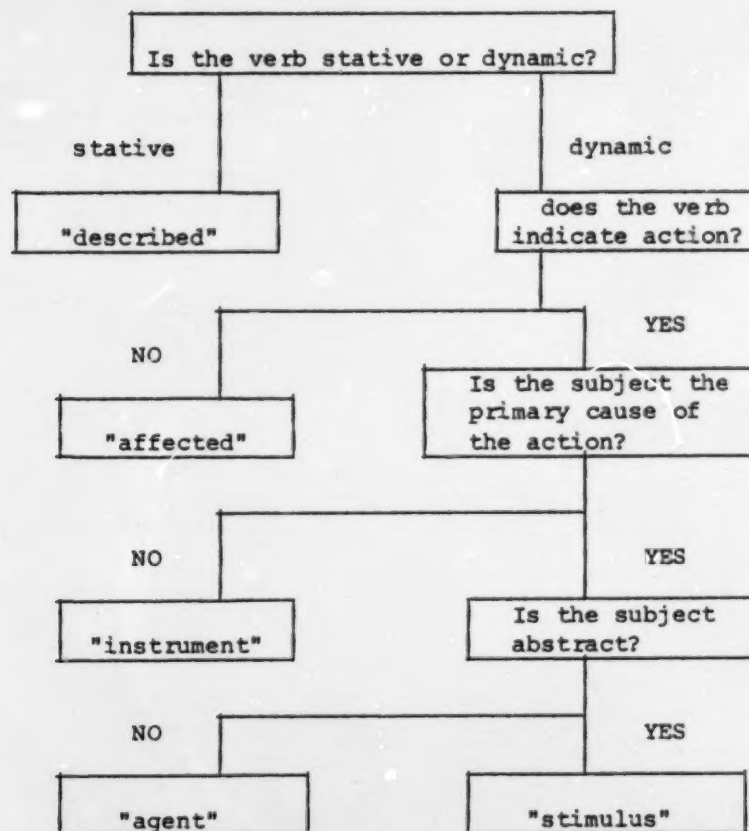
n) intensification:

- o intensifies or diminishes the information presented in an argument.
- o closed set of adverbs are always intensification arguments (eg. nearly, highly).

o) accompaniment:

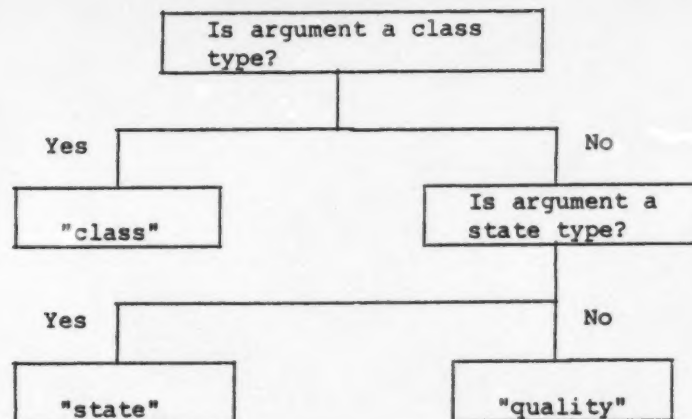
- o identifies the element that accompanied or did not accompany some other argument in the action expressed by the predication.
- o nouns introduced by the following argument markers are considered accompaniment arguments: along with, with, without, except, except for;

Again the argument types listed above are relatively easy to recognize given a knowledge of their characteristics. The remaining argument type can cause more confusion: agent, instrument, stimulus, described, affected, subject matter, situation, object, state, quality, and class. To facilitate their identification decision trees are presented below. We will first consider argument types that can be in subject position in predications with active voice predicates. Those argument types are: described, affected, instrument, agent and stimulus. The following decision tree can be used to identify these argument types when context does not make the type obvious.



When the verb in a predication is in the passive voice these decision rules can be applied to the arguments in complement position.

Quality, class and state arguments are usually found in complement position in predications with stative verbs. They are also commonly found in prenoun position acting as a modifier. For the most part two of these three argument types also have relatively salient features. Class arguments are always nouns; state arguments belong to a closed set of verbs and adjectives (see Chapter 3). Consequently when deciding among quality, class and state arguments, quality can be used as a residual category. That is, if the argument can not be classified as a state or class argument, it should be classified as a quality argument.



Subject matter, situation and object are the last argument types to consider. Of these subject matter arguments have the most easily identified characteristics. Specifically they are always introduced by one of the following argument markers: about, on, at, of, with, and for.

The major point of confusion regarding subject matter arguments occurs when the argument marker for is used.

eg. He was accountable for the money.

Recall that stimulus arguments can also be introduced by the marker for. The distinction between stimulus and subject matter is that stimulus arguments must have a clear causal relationship with the action expressed in the predication. In the example above this is not the case; hence, the argument money is classified as a subject matter argument.

Situation arguments are the residual category for any argument introduced by an argument marker that can not be classified as a subject matter argument or any other argument type. Finally object arguments are the residual category for arguments not introduced by an argument marker which can not be classified as another argument type. These two residual categories, situation and object, make the system totally inclusive and the argument types mutually exclusive.

Given this background we may now discuss some of the decisions made in the sample essay. In this essay most argument types were fairly obvious. The following, however, required more subjectivity in coding than the others.

- o Football in predication 8 is a subject matter argument because the two part verb went out requires a subject matter complement much as the verb discuss would require a subject matter argument. Note that baseball and track which are compounded to football are also classified as subject matter arguments. The convention for compounded arguments (see Chapter 4) is that they carry the argument type of that argument to which they are compounded. In the case of antithesis compounding the null marker $\emptyset$ will be used indicating that the compounded argument does not possess the qualities of the argument to which it is compounded. For example, "Bill liked Mary not Sally" would be coded as follows:

Bill - Agent
 liked - Predicate
 Mary - Object
 Sally - $\emptyset$ Object

- o Everything in predication 9 is coded as a situation argument primarily because it does not fit the description of a subject matter argument. This is also the case with school and vacation in 11, and decathelon in 15.
- o Team in 12 is a stimulus argument. It is introduced by the marker for and indicates the reason or motive for the action expressed in the predication. This is also the case with it in 13, and money in 17.

Argument type can be quantified by obtaining a frequency count for each type and scaling that by the number of arguments. The frequencies for each argument type are:

described	6
quality	5
class	6
agent	12
object	6
specifier	2
owner/possessor	3
nonrelative time	2
relative time	3
location	1
direction	4
subject matter	3
situation	4

stimulus	3
affected	<u>1</u>
TOTAL	61

Scaling each frequency by 62, the total number of arguments in the sample, gives us the following relative frequencies:

described	.098
quality	.081
class	.098
agent	.197
object	.098
specifier	.033
owner/possessor	.049
nonrelative time	.033
relative time	.049
location	.016
direction	.065
subject matter	.049
situation	.065
stimulus	.049
affected	<u>.016</u>
TOTAL	1.000 (within rounding error)

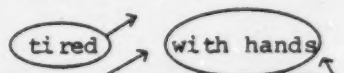
ARGUMENT DEPTH

The concept of argument depth is a natural outgrowth of the concept of argument levels described in Chapter 4. To illustrate recall the levels of the arguments in the predication "He was a tired man with strong hands, puffed and muscled at the fingers."

Level 1:

he was a man

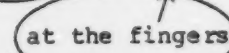
Level 2:



Level 3:



Level 4:



To develop an index of argument depth we simply assign each argument a weight equal to the argument level it is on. Because he, was and man are on the first level they receive weights of 1; because tired and with hands are on the second

level they receive weights of 2. All argument then (including the verb in the predication) are assigned weights following this procedure. The average argument depth for a predication can be calculated by adding up the total weights for a predication and dividing by the number of arguments and predicates:

Arguments	Weights
he	1
was	1
man	1
tired	2
with hands	2
strong	3
puffed	3
muscled	3
at fingers	4
TOTAL	20

$$\text{Average Argument Depth} = \frac{\text{Total Argument Weight}}{\text{Total \# of Arguments}} = \frac{20}{9} = 2.22$$

The average argument depth for this predication is 2.22. Of course this index can be applied to a set of predications to obtain an average depth for all arguments.

The most difficult part of the process of identifying argument levels is identification of the first level arguments. To avoid subjectivity in such decisions I operationally define first level arguments as those which fit into one of the following structures (defined in traditional grammar terms):

- 1) Subject - Verb
eg. He runs.
- 2) Subject - Verb - Direct Object
eg. Bill likes Mary.
- 3) Subject - Verb - Object - Object Complement
eg. We voted Bill president.
- 4) Subject - Verb - Indirect Object - Direct Object
eg. He gave Bill a present.
- 5) Subject - Verb - Subject Complement
eg. He is nice.

Predication #7

Level 1: (he) (got) (older): pattern 5

Level 2: ↑
(when)

Predication #8

Level 1: (he) (went out) (for football) (baseball)
(track): pattern 6

Predication #9

Level 1: (He) (was) (outstanding): pattern 5

Level 2: ↑
(in everything)

Predication #10

Level 1: (he) (tried): pattern 1

Predication #11

Level 1: (he) (was) (on vacation): pattern 6

Level 2: ↑ ↑ ↑
(when) (time) (from school)

Level 3: ↑
(one)

Predication #12

Level 1: (he) (played) (for team): pattern 6

Level 2: ↑ ↑
(small) (farm)

Predication #13

Level 1: (got paid) (for it): pattern 6

Predication #14

Level 1: (he) (went) (to Olympics): pattern 6

Predication #15

Level 1: (He) (won) (medal): pattern 2

Level 2: ↑ ↑
(gold) (in decathlon)

Predication #16

Level 1: (committee) (found out): pattern 1

 ↑
Level 2: (Olympic)

Predication #17

Level 1: (he) (had played) (baseball): pattern 2

 ↑
Level 2: (for money)

Predication #18

Level 1: (they) (took) (trophy): pattern 2

 ↑ ↑
Level 2: (away) (his)

Predication #19

Level 1: (life) (started going) (down): pattern 7

 ↑
Level 2: (his)

Predication #20

Level 1: (he) (became) (coach): pattern 5

Note some conventions used above.

- o If any set of arguments looks as though it could be classified as more than one level I pattern, use the order in which the patterns were presented to make a decision. For example, in predication 18 the arguments could have been classified as pattern 7 (they took away). However, they could also be classified as pattern 2 ("they took trophies"). Since pattern 2 preceded 7 in order of presentation, the arguments were classified as pattern 2.
- o Compounded arguments are placed on the same level as the argument to which they are attached (eg. baseball and track in predication 8).

With argument level identified weights can be assigned to each argument. Again each argument receives a weight equal to its level. Below I have done this for the sample arguments.

Argument	Wt.	Argument	Wt.	Argument	Wt.
-1-		-10-		-19-	
Jim Thorpe	1	he	1	life	1
was	1	tried	1	started going	1
man	1	-11-		down	1
great	2	he	1	his	2
-2-		was	1	-20-	
he	1	on vacation	1	he	1
loved	1	when	2	became	1
sports	1	time	2	coach	1
-3-		from school	2		
He	1	one	3		
lived	1	-12-		TOTAL	
sports	1	he	1	WEIGHT	104
life	2	played	1		
his	3	for team	1		
all	3	small	2		
-4-		farm	2		
he	1	-13-			
was	1	got paid	1		
little	1	for it	1		
when	2	-14-			
-5-		he	1		
he	1	went	1		
lived	1	to Olympics	1		
on reservation	1	-15-			
Indian	2	he	1		
-6-		won	1		
He	1	medal	1		
went	1	gold	2		
to college	1	in decathlon	2		
-7-		-16-			
He	1	committee	1		
got	1	found out	1		
older	1	Olympic	2		
when	2	-17-			
-8-		he	1		
he	1	had played	1		
went out	1	baseball	1		
for football	1	for money	2		
baseball	1	-18-			
track	1	they	1		
-9-		took	1		
He was	1	trophies	1		
outstanding	1	away	2		
in everything	2	his	2		

Note that above I have included verbs in the weighting procedure. Once weights are assigned to arguments an index of argumental depth can be calculated using the following formula:

$$\text{Argumental Depth} = \frac{\text{Total Weights}}{\text{total \# of Arguments and Predicates}}$$

For the sample essay that index is:

$$\text{Argumental Depth} = \frac{104}{80} = 1.30$$

ARGUMENTAL SOPHISTICATION

Argumental sophistication is operationally defined as the frequency of use of the arguments and verbs. To calculate this average frequency index the arguments must be compared to some word frequency list. There are many such lists (eg. Carroll et al., 1971, Thorndike and Lorge, 1943). Below, using the Thorndike list I have identified the frequency of use for each of the arguments and verbs in the sample essay.* Note that I have excluded proper nouns and argument markers from this analysis; I have also not included any auxiliary verb forms:

* Following Thorndike's grade level recommendations I have made the following numeric translations for this analysis: AA=1.5; A=3; 49-20=4; 19-10=5.5; 9-6=7.5; 5 and below=10.5

Argument	Fq.	Argument	Fq.	Argument	Fq.
-1-		-10-		-19-	
Jim Thorpe	1.5	he	1.5	life	1.5
was	1.5	tried	1.5	started going	1.5
man	1.5	-11-		down	1.5
great	1.5	he	1.5	his	1.5
-2-		was	1.5	-20-	
he	1.5	on vacation	4.0	he	1.5
loved	1.5	when	1.5	became	1.5
sports	1.5	time	1.5	coach	4.0
-3-		from school	1.5		
He	1.5	one	1.5		
lived	1.5	-12-		TOTAL	
sports	3.0	he	1.5	WEIGHT	163
life	1.5	played	1.5		
his	1.5	for team	3.0		
all	1.5	small	1.5		
-4-		farm	1.5		
he	1.5	-13-			
was	1.5	got paid	1.5		
little	1.5	for it	1.5		
when	1.5	-14-			
-5-		he	1.5		
he	1.5	went	1.5		
lived	1.5	to Olympics			
on reservation	5.5	-15-			
Indian		he	1.5		
-6-		won	3.0		
He	1.5	medal	5.5		
went	1.5	gold	1.5		
to college	1.5	in decathlon	0.51		
-7-		-16-			
He	1.5	committee	3.0		
got	1.5	found out	1.5		
older	1.5	Olympic			
when	1.5	-17-			
-8-		he	1.5		
he	1.5	had played	1.5		
went out	1.5	baseball	5.5		
for football	1.5	for money	1.5		
baseball	5.5	-18-			
track	3.0	they	1.5		
-9-		took	1.5		
He was	1.5	trophies	7.5		
outstanding	1.5	away	1.5		
in everything	5.5	his	1.5		

The average word frequency is then calculated by dividing the total of the frequencies by the number of arguments and predicates analyzed. For the example above this average is:

$$\text{Average Frequency} = \frac{\text{Total of Frequencies}}{\text{Total \# of Arguments} + \text{Verbs Analyzed}} = \frac{163}{76} = 2.143$$

It is important to note that this quantity is meaningful only in a comparative sense. That is, only when compared with other language samples analyzed in the same way does the value take on any meaning.

REFERENCES

- Carroll, J.B., Davies, P., and Richman, B. Word Frequency Book
Boston: Houghton Mifflin, 1971.
- Thorndike, E.L. and Lorge, I. The Teachers Word Book of 30,000 words, New York: Teachers College Press, 1943.

CHAPTER 8

MEASURING ARGUMENTAL RELATIONSHIPS

In this chapter I will discuss various ways of quantifying the use of argumental relationships between predications. Specifically we will consider four different areas of measurement: 1) type of argumental relationship; 2) fluency of transition; 3) conceptual vs. linear reference; and 4) topics. Prior to discussing these areas we will first consider modifications of the predication base.

THE PREDICATION BASE

The procedure for establishing a predication base with which to analyze argumental relationships is the same as that described in Chapter 7. The rule of thumb is that each verb form or part of a verb form represents a predication. The only difference here is that all understood arguments should be included. Below I have done this for the twenty sample predications:

- 1) Jim Thorpe was a great man (time)
- 2) he loved sports. (time)
- 3) He lived sports all his life.
- 4) When he was little
- 5) he lived on an Indian reservation. (time)
- 6) He went to college (time)
- 7) when he got older.
- 8) He went out for football, baseball, and track. (time)
- 9) He was outstanding in everything (time)
- 10) (that) he tried. (time)
- 11) When he was on vacation from school one time
- 12) he played for a small farm team (time)

- 13) (Jim Thorpe) got paid for it. (time)
- 14) He went to the Olympics. (time)
- 15) He won the gold medal in the decathlon. (time)
- 16) The Olympic committee found out _____ (time)
- 17) he had played baseball for money (time)
- 18) they took away his trophies and medals. (time)
- 19) His life started going down hill. (time)
- 20) He became a coach. (time)

Note that an understood time argument is attached to every predication that does not have an explicitly stated relative or nonrelative time marker. It is an assumption of the grammar that all predications have an implicit time argument. Predications 3, 4, 7, and 11 have explicit time arguments, 4, 7, and 11 contain the relative time argument when; predication 3 contains the nonrelative time argument life. Also note the understood wh-word, that, in predication 10 and the understood subject Jim Thorpe in 13.

Once a predication base has been constructed reference lines should be drawn which identify argumental relationships. I have done this below for the sample predications:

- 1) Jim Thorpe was a great man (time)
- 2) he loved sports. (time)
- 3) He lived sports all his life.
- 4) When he was little
- 5) he lived on an Indian reservation (time)
- 6) He went to college (time)
- 7) when he got older.
- 8) He went out for football, baseball, and track. (time)
- 9) He was outstanding in everything (time)
- 10) (that) he tried. (time)
- 11) When he was on vacation from school one time
- 12) he played for a small farm team (time)
- 13) (Jim Thorpe) got paid for it. (time)
- 14) He went to the Olympics. (time)
- 15) He won the gold medal in the decathlon. (time)
- 16) The Olympic committee found out _____ (time)
- 17) he had played baseball for money (time)
- 18) they took away his trophies and medals. (time)
- 19) His life started going down hill. (time)
- 20) He became a coach. (time)

Note that I have not identified every argumental relationship. Instead I have identified what I will call the "primary line of reference." The primary line of reference is defined as the mapping of the first argumental relationship signaled in each predication. Most of the quantitative techniques described in this chapter deal only with that primary reference line.

QUANTIFYING TYPE OF ARGUMENTAL RELATIONSHIP

The most straightforward measure of the use of argumental relationships is the relative frequency of various types of argument relationships. Recall from Chapter 5 that there are eleven types of argumental relationships:

- 1) Same word
- 2) Pronoun
- 3) Synonym
- 4) Metaphoric
- 5) Generic
- 6) Related Argument
- 7) Wh-word
- 8) Deleted Subject
- 9) Whole Predication
- 10) Situational
- 11) Nominolization

Since each of these have fairly distinctive characteristics which were discussed in detail in Chapter 5, I will not review those characteristics here. Below I have identified the type of argumental relationship used in each of the sample predications:

- o he in 2 has a pronoun relationship with Jim Thorpe in 1.
- o he in 3 has a pronoun relationship with he in 2.
- o when in 4 has a wh-word relationship with the understood time argument in 5.
- o he in 5 has a pronoun relationship with he in 4.
- o he in 6 has a pronoun relationship with he in 5.
- o when in 7 has a wh-word relationship with the understood time argument in 6.
- o he in 8 has a pronoun relationship with he in 7.
- o he in 9 has a pronoun relationship with he in 8.
- o the understood that in 10 has a wh-word relationship with everything in 9.

- o when in 11 has a wh-word relationship with the understood time argument in 12.
- o he in 12 has a pronoun relationship with he in 11.
- o the understood subject Jim Thorpe in 13 has a deleted subject relationship with he in 17.
- o he in 14 has a pronoun relationship with the understood subject Jim Thorpe in 13.
- o he in 15 has a pronoun relationship with he in 14.
- o committee in 16 has a related argument relationship with Olympics in 14.
- o he in 17 has a pronoun relationship with he in 15.
- o they in 18 has a pronoun relationship with committee in 16.
- o life in 19 has a related argument relationship with his in 18.
- o he in 20 has a pronoun relationship with his in 19.

Tallying the frequency for the various types of argumental relationships produces the following:

Type of Relationship	Frequency
same word	
pronoun	12
synonym	
metaphoric	
generic	
related argument	2
wh-word	4
deleted subject	1
whole predication	
situational	
nominalization	

For comparative purposes these frequencies must be changed to relative frequencies by dividing by the total number of predications:

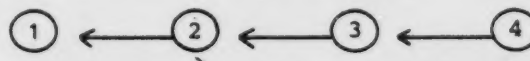
Type of Relationship	Relative Frequency
same word	
pronoun	.60
synonym	
metaphoric	
generic	
related argument	.10
wh-word	.20
deleted subject	.05
whole predication	
situational	
nominalization	

MEASURING FLUENCY OF TRANSITION

Fluency of transition is operationally defined as the extent to which the argumental referent (the argument that is referred back to) in the primary line of reference immediately precedes a predication. To illustrate this consider the following:

- 1) Mike likes Mary
- 2) She lives on the west side.
- 3) She is a friend of Bill's.
- 4) Bill lives on Roslyn Street.

Here within the primary line of reference each predication is connected to the one which immediately precedes it. There is a flow or sense of fluency from one predication to the next. We can represent this flow diagrammatically in the following way:



Compare this with the following:

- 1) Mike likes Mary.
- 2) She lives on the west side.
- 3) Mike goes to Lakewood High School.
- 4) The west side is a nice part of town.

Here the flow of the primary line of reference does not proceed from one predication to the next:



We can quantify the extent to which predications refer back to those predications which are immediately preceding by using the following procedure:

- 1) Identify the predication number of the primary line referent for each predication. Below this has been done for the sample essay:

A Predication	B Referent of Primary Line
1	-
2	1
3	2
4	5
5	4
6	5
7	6
8	7
9	8
10	9
11	12
12	11
13	12
14	13
15	14
16	14
17	15
18	16
19	18
20	19

- 2) Subtract Column B from Column A.

A	B	B-A	A	B	B-A
1	-	-	11	12	-1
2	1	1	12	11	1
3	2	1	13	12	1
4	5	-1	14	13	1
5	4	1	15	14	1
6	5	1	16	14	2
7	6	1	17	15	2
8	7	1	18	16	2
9	8	1	19	18	1
10	9	1	20	19	1

Note that when a predication has no referent (eg. predication 1) a dash is placed in columns B and C.

3) Analyze column C for strings of plus or minus 1. In the example above there is one long string ranging from predications 2-15 and one small string from 19-20. There are a number of indices which can be calculated using strings:

a) Length of Longest String = 14

b) Average Length of Strings = $\frac{14 + 2}{2} = 8$

c) Range of String Lengths = $14 - 2 = 12$

Another way of quantifying fluency is to measure the distance between the primary referent in each predication and its antecedent. To illustrate, consider the following.

Bill is my friend.

He is nice.

Here there are three words between he and its antecedent Bill; that is, the distance between he and its antecedent is 3. The distances for the primary line of reference in our sample essay are calculated below:

Predication	Distance to Referent
1	-
2	4
3	2
4	0
5	2
6	5
7	0
8	2
9	7
10	0
11	0
12	8
13	6
14	4
15	4
16	7
17	12
18	8
19	3
20	5
TOTAL	65

One convention should be noted here. When the wh-word when is used to refer back to an understood time argument (eg. predications 4, 7, and 11) the distance is automatically considered to be 0. The average distance between predications is calculated by dividing the total distance (65) by the total number of predications that have referents:

$$\text{Average Distance} = \frac{65}{19} = 3.42$$

CONCEPTUAL VS. LINEAR REFERENCE

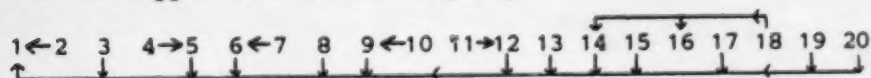
When mapping the primary line of reference in the previous section the referent was considered to be the "closest" argument referred back to. There is another way of conceptualizing a referent; that is as the "first mention" of the argument. To illustrate consider the following:

- 1) Bill is my friend.
- 2) He is a good baseball player.
- 3) He likes many sports.

Here the reference lines for he in 2 and he in 3 are both drawn to Bill which is the first mention of the concept referred to by he. I will call this type of mapping "conceptual reference" and the former type "linear reference." Below I have mapped the conceptual primary line of reference for the sample essay:

- 1) → Jim Thorpe was a great man (time)
- 2) (he) loved sports. (time)
- 3) (He) lived sports all his life.
- 4) (When) he was little
- 5) (he) lived on an Indian reservation. (time)
- 6) (He) went to college. (time)
- 7) (when) he got older.
- 8) (He) went out for football, baseball, and track. (time)
- 9) (He) was outstanding in everything (time)
- 10) ((that)) he tried. (time)
- 11) (When) he was on vacation from school one time
- 12) (he) played for a small farm team (time)
- 13) ((Jim Thorpe)) got paid for it. (time)
- 14) (He) went to the Olympics. (time)
- 15) (He) won the gold medal in the decathlon. (time)
- 16) The Olympic (committee) found out _____ (time)
- 17) (he) had played baseball for money (time)
- 18) (they) took away his trophies and medals. (time)
- 19) His (life) started going down hill. (time)
- 20) (He) became a coach. (time)

The primary line of conceptual reference is most easily seen if mapped in the following way:



Predication Depth

Conceptual reference lends itself to some unique indices. One index is predication depth, which is akin to argumental depth discussed in Chapter 7. To illustrate predication depth consider the following:

- a) I like Bill.
 - b) (He) is nice.
 - c) (He) lives in California.
 - d) (California) is on the Pacific.
-

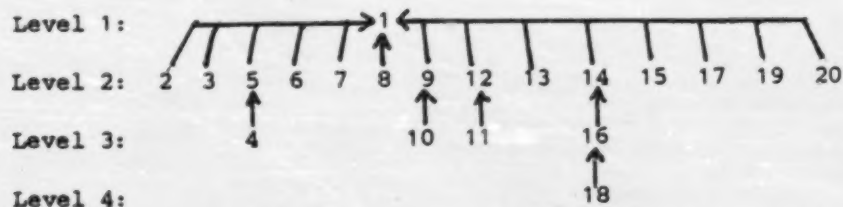
If we operationally define any predication without a conceptual referent as a level 1 predication, we can assign levels to predications as we did for arguments in Chapter 7. Below this has been done for the four sample predications:

Level 1: a

Level 2: b c

Level 3: d

The addition of reference lines provides a very useful visual map of the conceptual line of argumental relationships. Below this mapping has been done for the predications in the sample essay:



A predication depth index can be calculated by assigning a weight to each predication corresponding to the level of the predication. Below this has been done for the sample predications:

Predication	Weight
1	1
2	2
3	2
4	3
5	2
6	2
7	2
8	2
9	2
10	3
11	3
12	2
13	2
14	2
15	2
16	3
17	2
18	4
19	2
20	2
TOTAL	45

The index of predication depth is:

$$\text{Predication Depth} = \frac{\text{Total Weight}}{\text{Total \# of predications}} = \frac{40}{20} = 2.25$$

This measure can be combined with the index of argumental depth to produce an index of "Total Depth." Recall that the following weights were assigned to the arguments in the sample essay:

Argument	Wt.	Argument	Wt.	Argument	Wt.
-1-		-10-		-19-	
Jim Thorpe	1	he	1	life	1
was	1	tried	1	started going	1
man	1	-11-		down	1
great	2	he	1	his	2
-2-		was	1	-20-	
he	1	on vacation	1	he	1
loved	1	when	2	became	1
sports	1	time	2	coach	1
-3-		from school	2		
He	1	one	3		
lived	1	-12-		TOTAL	
sports	1	he	1	WEIGHT	104
life	2	played	1		
his	3	for team	1		
all	3	small	2		
-4-		farm	2		
he	1	-13-			
was	1	got paid	1		
little	1	for it	1		
when	2	-14-			
-5-		he	1		
he	1	went	1		
lived	1	to Olympics	1		
on reservation	1	-15-			
Indian	2	he	1		
-6-		won	1		
He	1	medal	1		
went	1	gold	2		
to college	1	in decathlon	2		
-7-		-16-			
He	1	committee	1		
got	1	found out	1		
older	1	Olympic	2		
when	2	-17-			
-8-		he	1		
he	1	had played	1		
went out	1	baseball	1		
for football	1	for money	2		
baseball	1	-18-			
track	1	they	1		
-9-		took	1		
He was	1	trophies	1		
outstanding	1	away	2		
in everything	2	his	2		

To obtain a Total Depth Index these argument weights must be scaled by the predication weights. That is if a predication has a weight of 2 (let's say) then all the argument weights for the predication must be scaled (multiplied) by a factor of 2. Below I have done this for the arguments in the sample essay:

Argument	Wt.	Argument	Wt.	Argument	Wt.
-1-		-8-		-15-	
Jin Thorpe	1x1=2	he	1x2=2	he	1x2=2
was	1x1=2	went out	1x2=2	won	1x2=2
man	1x1=2	for football	1x2=2	medal	1x2=2
great	2x1=2	baseball	1x2=2	gold	2x2=4
-2-		track	1x2=2	indecathelon	2x2=4
he	1x2=2	-9-		-16-	
loved	1x2=2	He was	1x2=2	committee	1x3=3
sports	1x2=2	outstanding	1x2=2	found out	1x3=3
-3-		ineverything	2x2=4	Olympic	2x3=6
He	1x2=2	-10-		-17-	
lived	1x2=2	he	1x3=3	he	1x2=2
sports	1x2=2	tried	1x3=3	had played	1x2=2
life	2x2=4	-11-		baseball	1x2=2
his	3x2=6	he	1x3=3	for money	2x2=4
all	3x2=6	was	1x3=3	-18-	
-4-		on vacation	1x3=3	they	1x4=4
he	1x3=3	when	2x3=6	took	1x4=4
was	1x3=3	time	2x3=6	trophies	1x4=4
little	1x3=3	from school	2x3=6	away	2x4=8
when	2x3=6	one	3x3=9	his	2x4=8
-5-		-12-		-19-	
he	1x2=2	he	1x2=2	life	1x2=2
lived	1x2=2	played	1x2=2	startedgoing	1x2=2
on mrservation	1x2=2	for team	1x2=2	down	1x2=2
Indian	2x2=2	small	2x2=4	his	2x2=4
-6-		farm	2x2=4	-20-	
He	1x2=2	-13-		he	1x2=2
went	1x2=2	got paid	1x2=2	became	1x2=2
to college	1x2=2	for it	1x2=2	coach	1x2=2
-7-		-14-			
He	1x2=2	he	1x2=2		
got	1x2=2	went	1x2=2		
older	1x2=2	to Olympics	1x2=2	TOTAL	
when	2x2=4			WEIGHT	241

The index of total depth is then calculated by dividing the total weight by the number of arguments:

$$\text{Total Depth} = \frac{\text{Total Scaled Weights}}{\text{Total \# of Arguments}} = \frac{241}{80} = 3.01$$

Conceptual Strings

Recall that strings were used to measure fluency within the primary line of linear reference. This same procedure can be applied to the primary line of conceptual reference; that is, strings can be identified using the primary line of conceptual reference. Below this has been done for the sample essay.

A	B	
Predication	Conceptual Referent	
1	-	
2	1	} string
3	1	
4	5	
5	1	} string
6	1	
7	1	
8	1	} string
9	1	
10	9	
11	12	} string
12	1	
13	1	
14	1	} string
15	1	
16	14	
17	1	} string
18	16	
19	1	
20	1	

Here strings are calculated differently; likewise their interpretation is different from that for linear reference. First let us consider the calculations for linear reference. We subtracted the referent number from the predication number (subtracted Column B from A) and then identified strings. Here we have simply identified the conceptual referent; then identified the strings.

The interpretation of conceptual vs. linear strings should help explain the necessary difference in procedures. Linear

strings measure fluency or the extent to which one predication refers to an adjacent predication. Conceptual strings measure the extent to which the primary line of reference contains sets of concepts. To illustrate, consider the following:

- 1) Mark likes Bill.
 - 2) (Bill) plays football.
 - 3) (Football) is a great sport.
 - 4) (Sports) are fun.
-

Here there is fluency in that one predication leads to the next. In fact the linear primary line of reference would be one string four predications long. However, if we analyzed the primary line of reference from a conceptual reference perspective there would be no strings because the primary line of reference in each predication focuses on a new concept (eg. Mark--Bill--football--sports). Contrast this with a set of predications that contains a conceptual string four predications long:

- 1) Mark likes Bill.
 - 2) (Bill) plays football.
 - 3) (Bill) is very intelligent.
 - 4) (He) is a straight A student.
-

Here the primary line of reference focuses on the same concept. Hence conceptual strings can be said to measure concept stability for adjacent predications within the primary line of reference. There are a number of useful indices which might be calculated using conceptual strings. Below those indices are named and calculated for the sample essay:

- a) Average Length = $\frac{\text{Total Length}}{\text{\# of Strings}} = \frac{(2+5+4+2)}{4} = 3.25$
- b) Range of String = $\frac{\text{Longest String}}{\text{Shortest String}} = \frac{5-2}{2} = 3$

- c) Average Number of = $\frac{\text{Total \# of Strings}}{\text{Total Predications}} = \frac{4}{20} = .25$
 Strings per Predication
- d) Number of Strings with = 0
 Different Referents

(This last index would pick up any concept shifts in the primary line of conceptual reference.)

TOPICS

Thus far, I have considered only the primary line of reference. By definition this procedure ignores all argumental relationships except the first one in a predication. The mapping of argumental relationships throughout an entire set of predications whether or not those relationships occur in the primary line, I will call "topics." To illustrate consider the following:

- a) I like Bill.
- b) He is a friend of mine.
- c) He likes my sister.
-

Here there are two topics, I (the speaker) and Bill.

	<u>I</u>	<u>Bill</u>
a)	I	Bill
b)	mine	he
c)	my	he

One important convention to follow when mapping topics is to reference a concept only once in a predication to illustrate consider the following:

- a) I like baseball.
- b) It is a good sport.
-

In predication b there are actually two arguments that refer to baseball in a: it and sport. The reference line is drawn from it to baseball rather than from both it and sport to

to baseball. It actually does not matter which referent the reference line is drawn from. I will use the convention of drawing the reference line from the first argument that is a referent.

Below I have mapped the different topic lines in the sample essay:

- 1) Jim Thorpe was a great man (time)
- 2) he loved sports. (time)
- 3) He lived sports all his life.
- 4) When he was little
- 5) he lived on an Indian reservation. (time)
- 6) He went to college (time)
- 7) when he got older.
- 8) He went out for football, baseball, and track. (time)
- 9) He was outstanding in everything (time)
- 10) (that) he tried. (time)
- 11) When he was on vacation from school one time
- 12) he played for a small farm team (time)
- 13) (Jim Thorpe) got paid for it. (time)
- 14) He went to the Olympics. (time)
- 15) He won the gold medal in the decathlon. (time)
- 16) The Olympic committee found out _____ (time)
- 17) he had played baseball for money (time)
- 18) they took away his trophies and medals. (time)
- 19) His life started going down hill. (time)
- 20) He became a coach. (time)

If we strip away all unrelated words we can see six topics in this set of predications:

Topic 1: Jim Thorpe	3) sports
1) Jim Thorpe	8) football, baseball, track
2) he	9) everything
3) he	17) baseball
4) he	
5) he	Topic 3: Life
6) he	3) life
7) he	19) life
8) he	
9) he	Topic 4: School
10) he	6) college
11) he	11) school
12) he	
13) he	Topic 5: Olympics
14) he	14) Olympics
15) he	15) decathlon
17) he	16) Olympic committee
18) his trophies	18) they
19) his life	
20) he	Topic 6: Medals
	15) medal
Topic 2: Sports	18) medals
2) sports	

Two more conventions should be noted here: 1) I have not considered any wh-word relationships, and 2) elements connected via related argument relationships are considered part of the same topic. (Eg. Topic 5: Olympic committee is considered part of the topic Olympics). There are a number of ways these topics can be quantified.

- a)
$$\text{Total Topics per Predication} = \frac{\text{Total \# of Topics}}{\text{Total \# of Predications}} = \frac{6}{20} = .30$$
- b)
$$\text{Range of Topic Lengths} = \text{Longest} - \text{Shortest} = 19 - 2 = 17$$
- c)
$$\text{Average Length of Topics} = \frac{\text{Total Length of Topics}}{\text{Total \# of Topics}} = \frac{34}{6} = 5.67$$

Above topic "length" is operationally defined as the number of predications involved in a topic.

When comparing language samples with differing numbers of predications b and c above should be scaled by the number of topics.

CHAPTER 9

MEASURING NONARGUMENTAL RELATIONSHIPS

In Chapter 6 were outlined the five types of nonargumental relationships each with subtypes. These five types are listed and exemplified below:

1. Cause:

a) Direct Cause:

He won the race by maintaining his concentration.

b) Reason:

He went to the store because he needed food.

c) Result:

Bill went home. Consequently the party ended.

d) Inference:

Mary is going on a long trip. In that case she should plan well.

e) Condition:

Unless you stop, I will leave.

2. Time

a) Subsequent Action:

They went to the game. Afterward they went to the dance.

b) Prior Action:

They went to the dance after they went to the game.

c) Concurrent Action:

Bill thought about Mary while Mary thought about Bill.

3. Addition:

a) Equality

He is tall and he is handsome.

b) Example:

He does many things well. For example, he is excellent at chess.

c) Restatement:

I am tired. In fact, I am exhausted.

d) Summation:

He does many things well.
He cooks.
He sews.
In all he is an excellent homemaker.

4. Contrast:

a) Antithesis:

I will be there, but I won't be happy.

b) Alternative:

Either it will rain or it will snow.

c) Comparison:

Bill is tall. In comparison his brother is short.

d) Concession:

I don't like violence. Nonetheless, I'll meet you at the fights.

5. Embedded:

a) Stimulus:

The fact that Bill left bothered Mary.

- b) Affected:
Bill's worrying continues.
- c) Subject Matter:
They talked about Todd's leaving.
- d) Object:
I know that he is nice.
- e) Described
That Todd runs is good.
- f) Class:
Happiness is running in the rain.

Again, these relationships are discussed in depth in Chapter 6; consequently I will not review their specifics here.

THE PREDICATION BASE

To establish a predication base for nonargumental relationships simply add the relationship markers to the predication base for argumental relationships. Below I have done this for the sample essay:

- 1) Jim Thorpe was a great man
[and]
- 2) he loved sports.
- 3) He lived sports all his life.
- 4) When he was little
- 5) he lived on an Indian reservation.
- 6) He went to college.
- 7) When he got older
- 8) he went out for football, baseball and track.

- 9) He was outstanding in everything
- 10) he tried.
- 11) When he was on vacation from school one time
- 12) he played for a small farm team
[and]
- 13) (Jim Thorpe) got paid for it.
[That next year]
- 14) he went to the Olympics.
- 15) He won the gold medal in the decathlon.
- 16) The Olympic committee found out _____
[that]
- 17) he had played baseball for money
[and]
- 18) they took away his trophy and medal.
[After that]
- 19) his life started going down
[then]
- 20) he became a coach.

Once a predication base is established the nonargumental relationships can be mapped and identified. I have done this below for the sample essay:

- 1) Jim Thorpe was a great man ←
[and] (addition: equality)
- 2) he loved sports. —
- 3) He lived sports all his life.
- 4) When he was little ← (time: concurrent action)
- 5) he lived on an Indian reservation. ← (time: subsequent action)
- 6) He went to college. ← (time: concurrent action)
- 7) When he got older —
- 8) he went out for football, baseball and track.
- 9) He was outstanding in everything
- 10) he tried.
- 11) When he was on vacation from school one time ← (time: concurrent action)
- 12) he played for a small farm team — (time: subsequent action)
- 13) (Jim Thorpe) got paid for it — [and] (addition: equality)
- 14) he went to the Olympics ← (time: subsequent action)
- 15) He won the gold medal in the decathlon. —
- 16) The Olympic committee found out [that] (embedded: object)
- 17) he had played baseball for money ← (addition: equality)
- 18) they took away his trophies and medal ← (time: subsequent action)
- 19) his life started going down [then] (time: subsequent action)
- 20) he became a coach. —

I will consider each nonargumental relationship separately:

a) Predication 2 has an additive equality relationship with 1 signaled by the relationship marker and.

b) Predication 4 has a concurrent action time relationship with 5 signaled by the wh-word when.

c) Predication 6 has a subsequent action time relationship with 5 because: 1) the predications are adjacent and, 2) both have dynamic verbs in the past or past perfect tense and, 3) they could not logically occur simultaneously but also quite likely occurred in sequence.

d) Predication 7 has a concurrent action, time relationship with 6 signaled by the wh-word when.

e) Predication 11 has a concurrent action time relationship with 12 signaled by the wh-word when.

f) Predication 13 has a subsequent action relationship with 12 because: 1) they are adjacent and, 2) both have dynamic verbs in the past or past perfect tense and, 3) they not only could not logically occur simultaneously but quite likely occurred in sequence.

g) Predication 13 has an additive equality relationship with 12 signaled by the relationship marker and.

h) Predication 14 has a subsequent action time relationship with 13 signaled by the relationship marker that next year.

i) Predication 15 has a subsequent action relationship with 14 because: 1) they are adjacent and, 2) both have dynamic verbs in the past or past perfect tense and 3) they not only could not logically occur simultaneously but quite likely occurred in sequence.

j) Predication 17 has an embedded object relationship with 16. This relationship is signaled syntactically by the fact that 17 is in complement position in 16 and is introduced by the relationship marker that.

k) Predication 18 has an additive equality relationship with 17 signaled by the relationship marker and.

l) Predication 19 has a subsequent action time relationship with 18 signaled by the relationship marker after that.

m) Predication 20 has a subsequent action time relationship with 19 signaled by the relationship marker then.

By far the most subtle and difficult to identify of the nonargumental relationship is subsequent action between two predications that have no explicit relationship marker. Recall from Chapter 6 that the conditions for such a relationship are: 1) the predications are adjacent, 2) both have dynamic verbs in the past or past perfect tenses and, 3) the actions in the predication not only did not logically occur simultaneously but also quite likely occurred in the stated sequence.

Predications 5-6, 12-13, 14-15 meet these criteria. But consider some predication pairs that do not--predications 2 and 3 for example:

2) he loved sports

3) he lived sports

Here the predications are adjacent and both have past tense dynamic verbs. However, they could have logically occurred simultaneously. That is, the actions of loving and living could have occurred together. Hence these predications are not coded as having a subsequent action relationship.

QUANTIFYING TYPE OF NONARGUMENTAL RELATIONSHIP

The most straight-forward measure of nonargumental relationships is the identification of the relative frequency of their use. In the sample passage there were 13 instances of nonargumental relationships and 20 predications. Hence the relative frequency of the use of nonargumental relationships is $13/20$ or .65.

Perhaps a more informative type of analysis is the identification of the relative frequencies for the five major types of nonargumental relationships. Below I have mapped those five types and calculated their respective relative frequencies:

Causal	Time	Addition	Contrast	Embedded
1	1	1 ← equality	1	1
2	2	2]	2	2
3	3	3	3	3
4	4 ←	4	4	4
5	5 ← concurrent	5	5	5
6	6 ← subsequent	6	6	6
7	7 ← subsequent	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11 ←	11	11	11
12	12 ← concurrent	12 ←	12	12
13	13 ← subsequent	13] equality	13	13
14	14 ← subsequent	14	14	14
15	15 ←	15	15	15
16	16	16	16	16 ← object
17	17	17 ← equality	17	17]
18	18 ← subsequent	18]	18	18
19	19 ← subsequent	19	19	19
20	20 ←	20	20	20
TOTAL	20	20	20	20
0	9	3	0	1
Rel Freq	9/20=.45	3/20=.15		1/20=.05

QUANTIFYING TOTAL CONNECTEDNESS

A possible index of total connectedness or overall cohesion is the total number of connections in a set of predications divided by the total number of predications. Total connections would include all topic connections (see Chapter 8) and all nonargumental relationships. Recall from Chapter 8 that there were six topics each of varying lengths.

Topic 1: Jim Thorpe: Length = 19

Topic 2: Sports: Length = 5

Topic 3: Life: Length = 2

Topic 4: School: Length = 2

Topic 5: Olympics: Length = 4

Topic 6: Medals: Length = 2

Total = 34

The number of "connections" between predications for any topic is one less than the number of predications in the topic (the length of the topic). Here the total length, 34 must be diminished by the number of topics (6) to obtain the total number of connections which in this case is 28.

This total number of connections can be added to the total number of nonargumental relationships (13) to obtain an interim total (41). Finally we must add in wh-word relationships since they were not included when identifying topics. In the set of sample predications there were four wh-word relationships: a) when connecting 4 and 5, b) when connecting 6 and 7, c) that connecting 9 and 10, and d) when connecting 11 and 12. Any when wh-word relationship will automatically be included in nonargumental relationships as concurrent action; hence we should not add them into our total count. The only remaining wh-word relationship not accounted for is the one signaled by that in 10; hence we add 1 to our interim total of 41. The ratio of total connections to total predications, then, gives us an index of total connectedness for a set of predications.

$$42/20 = 2.10$$

CHAPTER 10

SYNTAX

The final area we will consider when quantifying the various aspects of a set of predications is syntax. Specifically I will discuss: 1) argument type and syntactic form; 2) density, 3) predication syntactic form and 4) nonargumental relationship type and syntactic form.

ARGUMENT TYPE AND SYNTACTIC FORM

In Chapter 3 I discussed the various types of arguments and the syntactic forms they may take. Specifically an argument can take any of the following forms:

- a) noun (N)
- b) argument marker = noun (AM + N)
- c) pronoun (Pro)
- d) wh-word (Wh)
- e) adjective (Adj)
- f) adjective + of (Adj + of)
- g) adverb (Adv)
- h) interjection (Int)
- i) filler predication + argument marker + argument (FP)

In this chapter I will frequently use the symbols in parentheses to refer to specific forms.

A simple analysis is to "cross classify" the argument types in a language sample by the different syntactic forms. When doing this it is also useful to classify the verbs in syntactic form using the following coding system:

- (Aux) + MV: any base form main verb with or without auxiliaries
- (Aux) + MV + ing: any present participial main verb with or without auxiliaries
- (Aux) + MV + ed: any past participial main verb form with or without auxiliaries
- MV + s: any third person singular main verb form

to + (Aux) + MV: any infinitive with or without auxiliaries

Above the symbol Aux in parentheses indicates an optional auxiliary. Below I have cross classified the arguments and verbs in the sample predications by argument type and syntactic form:

Argument	Type	Syntactic form	Argument	Type	Syntactic form
-1- Jim Thorpe	described	N	baseball	subj mat	N
was	predicate	MV+ed	and track	subj mat	N
great	quality	Adj	-9- He	described	Pro
man	class	N	was	predicate	MV+ed
-2- He	agent	Pro	outstand.	quality	Adj
loved	predicate	MV+ed	in evthing	situation	AM+Pro
sports	object	N	-10- he	agent	Pro
-3- he	agent	Pro	tried	predicate	MV+ed
lived	predicate	MV+ed	-11- when	rel time	wh
sports	object	N	he	described	Pro
all	specifier	Adj	was	predicate	MV+ed
his	owner	Pro	onvacation	situation	AM+N
life	nonrel tm	N	from schl.	situation	AM+N
-4- when	rel time	wh	one	specifier	Adj
he	described	Pro	time	nonrel tm	N
was	predicate	MV+ed	-12- he	agent	Pro
little	quality	Adj	played	predicate	MV+ed
-5- he	agent	Pro	for team	stimulus	AM+N
lived	predicate	MV+ed	small	quality	Adj
on reserva	location	AM+N	farm	class	N
Indian	class	N	-13- got paid	predicate	Aux+MV+ed
-6- He	agent	Pro	for it	stimulus	AM+Pro
went	predicate	MV+ed	-14- he	agent	Pro
to college	direction	AM+N	went	predicate	MV+ed
-7- when	rel time	wh	to Olympic	direction	AM+N
he	described	Pro	-15- He	agent	Pro
got	predicate	MV+ed	won	predicate	MV+ed
older	quality	Adj	gold	class	Adj
-8- He	agent	Pro	medal	object	N
went out	predicate	MV+ed	in		
for			decathlon	situation	AM+N
football	subj mat	AM+N			

Argument	Type	Syntactic form	Argument	Type	Syntactic form
-16-					
Olympic	class	Adj	his	owner	Pro
Committee	agent	N	trophies	object	N
found out	predicate	MV+ed	and medals	object	N
-17-			-19-		
he	agent	Pro	His	owner	Pro
had played	predicate	Aux+MV+ed	life	affected	N
baseball	object	N	started go	predicate	Aux+MV+ing
for money	stimulus	AM+N	down	direction	Adv
-18-			-20-		
they	agent	Pro	he	described	Pro
took	predicate	MV+ed	became	predicate	MV+ed
away	direction	Adj	coach	class	N

Given that there are 26 different argument types and 9 different syntactic forms these arguments can take, we can produce a form/function table in which we cross tabulate argument type by syntactic form.

	N	AM+ N/ PRO	Pro	Wh	Adj	Adj + of	Adv	Int	FP	TOTAL
agent	1		11							12
instrument										-
stimulus		3								3
described	1		5							6
affected	1									1
recipient										-
subject matter	2	1								3
situation		4								4
direction		2					2			4
object	6									6
state										-
quality					5					5
class	4				2					6
standard/comp										-
owner/possessor			3							3
nonrel time	2									2
relative time				3						3
location		1								1
existence										-
attitude										-
duration										-
exclamation										-
intensify/diminish										-
manner										-
specification					2					2
accompaniment										-
TOTALS	21	11	19	3	9	-	2	-	-	65

For the purpose of comparing one language sample with another these frequencies should be changed to relative frequencies by dividing by the total number of arguments. Below I have done this for the sample essay:

	N	AM+ N/ PRO	Pro	Wh	Adj	Adj + of	Adv	Int	FP	TOTAL
agent	.016		.180							.196
instrument										-
stimulus		.049								.049
described	.016		.082							.098
affected	.016									.016
recipient										-
subject mat	.033	.016								.049
situation		.066								.066
direction		.033					.033			.066
object	.098									.098
state										-
quality					.082					.082
class	.066				.033					.099
standard/comp										-
owner/			.049							.049
possessor										-
nonrel time	.033									.033
relative time				.049						.049
location		.016								.016
existence										-
attitude										-
duration										-
exclamation										-
intensify/										-
diminish										-
manner										-
specification					.033					.033
accompaniment										-
TOTALS	.278	.180	.311	.049	.148	-	.033	-	-	1.00

DENSITY

Density here refers to the extent to which a writer/speaker packs concepts into the basic unit of thought. Of course the problem with this definition is: "What is the basic unit of thought?" Since the primary unit of analysis in this grammar is the predication an obvious index for density is the number of arguments divided by the number of predications. In our same essay there are 61 arguments and 20 predications.

$$61/20 = 1.525$$

Another primary unit of analysis commonly used in language research is the t-unit. A t-unit is operationally defined as a main clause with all related concepts. In our sample essay there are 14 t-units. Those 14 t-units are listed below:

- 1) Jim Thorpe was a great man
- 2) he loved sports
- 3) he lived sports all his life
- 4) when he was little he lived on an Indian reservation
- 5) He went to college when he got older
- 6) he went out for football, baseball, and track.
- 7) He was outstanding in everything he tried
- 8) When he was on vacation from school one time he played for a small farm team and got paid for it.
- 9) That next year he went to the Olympics
- 10) He won the gold medal in the decathlon
- 11) The Olympic committee found out that he had played baseball for money
- 12) they took away his trophies and medals
- 13) his life started going down after that
- 14) Then he became a coach

One index of density is the number of arguments per t-unit:

$$61/14 = 4.357$$

Another index is the number of predications per t-unit:

$$20/14 = 1.429$$

PREDICATION TYPE AND FORM

Recall from the earlier discussion that the predicate in a predication can take five different forms:

- a) (Aux) + MV
- b) (Aux) + MV+ing
- c) (Aux) + Mv+ed
- d) MV + s
- e) to + (Aux) + MV

We can cross reference the syntactic form of the predicate by the stative vs. dynamic function of the predication. Below I have classified each predication as either stative or dynamic. Immediately following I have cross tabulated the five syntactic forms by function (stative vs. dynamic); Frequencies and relative frequencies are reported:

Predication 1:	stative
Predication 2:	dynamic
Predication 3:	dynamic
Predication 4:	stative
Predication 5:	dynamic
Predication 6:	stative
Predication 7:	dynamic
Predication 8:	dynamic
Predication 9:	stative
Predication 10:	dynamic
Predication 11:	stative
Predication 12:	dynamic
Predication 13:	dynamic
Predication 14:	dynamic
Predication 15:	dynamic
Predication 16:	dynamic
Predication 17:	dynamic
Predication 18:	dynamic
Predication 19:	dynamic
Predication 20:	stative

Form	Function	
	Stative	Dynamic
(Aux) + MV		
(Aux) + MV+ing		freq. = 1 rel freq. = .05
(Aux) + MV+ed	freq. = 6 rel freq. = .30	freq. = 13 rel freq. = .05
MV + s		
to + (Aux) + MV		

ARGUMENTAL RELATIONSHIPS AND PREDICATION SYNTAX

We may also cross classify the types of argumental relationships that exist between predication and the syntactic form of the predication. Recall that the sample predication had the following argumental relationships.

- 2: pronoun relationship with 1
- 3: pronoun relationship with 2
- 4: wh-word relationship with 3
- 5: pronoun relationship with 4
- 6: pronoun relationship with 5
- 7: wh-word relationship with 6
- 8: pronoun relationship with 7
- 9: pronoun relationship with 8
- 10: wh-word relationship with 9
- 11: wh-word relationship with 10
- 12: pronoun relationship with 11
- 13: deleted subject relationship with 12
- 14: pronoun relationship with 13
- 15: pronoun relationship with 14
- 16: related argument relationship with 15
- 17: pronoun relationship with 16
- 18: pronoun relationship with 17
- 19: related argument relationship with 18
- 20: pronoun relationship with 19

If we cross tabulate the syntactic form of the later predication in the argumental relationships (those predication on the left) with the type of argumental relationship it has, we obtain the following results:

	pro	syn	met	gen	r	a	wh	del	s	w	p	sit	nom
(Aux)+MV													
(Aux)+MV+ing					f=1 r=.05								
(Aux)+MV+ed	f=12 r=.63				f=1 r=.05	f=1 r=.21	f=1 r=.05						
MV+s													
to+(Aux)+MV													

Note that to obtain the relative frequencies above (r) the frequencies (f) were divided by 19, the number of argumental relationships in the sample.

NONARGUMENTAL RELATIONSHIPS AND SYNTACTIC FORM

The final type of syntactic/semantic analysis presented here is a cross referencing of the syntactic form of a predication by its type of nonargumental relationship. For this analysis I will use the following classification of syntactic forms:

- a) Embedded Verb Phrase + ed (EVP+ed):
eg. Equality Relationship
He laughed and sang.
- b) Embedded Verb Phrase + ing (EVP+ing):
eg. Concurrent Action Relationship
I saw Bill singing.
- c) Embedded Infinitive (EINF):
eg. Reason Relationship
He laughed to ease the tension.
- d) Relationship Marker + Embedded Verb Phrase (RM+EVP):
eg. Direct Cause Relationship
He won by maintaing his concentration.
- e) Relationship Marker + Embedded Subordinate Clause (RM+ESC):
eg. Reason Relationship
He left because Bill left.

- f) Relationship Marker + Separate Sentence or Main Clause (RM+SS/MC):
 eg. Inference Relationship
 Mary is going on a trip. In that case she should plan well.
- g) Predication + Relationship Marker + Embedded Subordinate Clause or Verb Phrase + ed/ing (F+RM+ESC/VP):
 eg. Reason Relationship
 Bill left. This was because of Mary's leaving.
- h) Separate Sentence (SS):
 eg. Subsequent Action
 Bill got up. He ate breakfast.

Below I have cross tabulated the types of nonargumental relationships used in the sample essay with the structures listed above. Note that I have used the general categories of time, cause, addition, contrast and embedding rather than the subcategories. Of course this same analysis may be performed using the subcategories. Note that frequencies (f) and relative frequencies (r) have been reported and that the denominator used for calculating relative frequencies was the number of nonargumental relationships (13) rather than total number of predications.

	Time	Cause	Addition	Contrast	Embedded
EVP+ed	f=1 r=.08		f=1 r=.08		
EVP+ing					
EINF					
RM+EVP					
RM+ESC	f=3 r=.23				f=1 r=.08
RM+SS/MC	f=3 r=.23		f=2 r=.15		
P+RM+ESC/VP					
SS	f=2 r=.15				